

SENEY (NWR) and HURON ISLANDS (NWR)-
NARRATIVE REPORT 1968

Seney

To whom it may concern:

Would you please send me information on the Canada Base, black ducks, mallards, ring-necked ducks, deer, bears, and the small animals of the refuge. Please send information of on the refuge too. My name is Steve McQueen and I'm 11 years old. I would like to have my own refuge, but if not possible I would like to be a veterinarian.



Thank you,
Steve McQueen

SENEY NATIONAL WILDLIFE REFUGE

AND

HURON ISLANDS NATIONAL WILDLIFE REFUGE

ANNUAL NARRATIVE REPORT

* 1968 *

UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

BUREAU OF SPORT FISHERIES AND WILDLIFE

SENEY, MICHIGAN

SENEY NATIONAL WILDLIFE REFUGE

PERSONNEL

Refuge Manager John E. Wilbrecht
Assistant Refuge Manager (Biologist) Gerald H. Updike *
Assistant Refuge Manager Donald J. Elias **
Refuge Forester Bernard S. Hubbard Jr.
Refuge Clerk Omer L. Doran
Mechanic (Heavy-Duty) George Orlich
Maintenance man Glen C. Losey

* Transferred to J.Clark Salyer Refuge on 11/17/68.

** E.O.D. 03/14/68

TEMPORARY PERSONNEL

<u>Biological Technicians</u>	<u>E.O.D.</u>	<u>Terminated</u>
Ronald J. Field	06-17-68	09-20-68
Conrad A. Fjetland	06-17-68	09-03-68
John E. Sarvis	04-29-68	08-20-68
Larry S. Strecker	06-17-68	11-22-68

SENEY NATIONAL WILDLIFE REFUGE

TEMPORARY PERSONNEL

<u>Laborers</u>	<u>E.O.D.</u>	<u>Terminated</u>
Susan L. Jack (Visitor Center Receptionist)	06-11-68	08-23-68
William H. Ketola	05-14-68	11-01-68
Leo D. Lawrence	04-22-68	12-24-68
Louis Verner	06-10-68	09-09-68
Lawrence Zellar	01-15-68	09-20-68

President's Youth Opportunity Campaign (Y.O.C.)

Louis Berry	06-10-68	10-11-68 *
Gerald L. Latsch	06-10-68	08-30-68

* Mr. Berry was terminated as a Y.O.C. on 09-30-68 and rehired as a laborer on 10-01-68.

Neighborhood Youth Corps (N.Y.C.) *

Robert Jack	06-11-68	08-30-68
Kenneth Ketola	06-11-68	08-30-68
Lawrence Vanatta	06-11-68	08-30-68

* Hired through the local Community Action Agency (CAA) office. Funds were furnished by that agency to pay the salaries of these employees at the rate of 25 hours per week.

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I. GENERAL

A. Weather Conditions

	<u>Month</u>	<u>Precipitation</u>		<u>Max. Temp.</u>	<u>Min. Temp.</u>
		<u>Normal</u> *	<u>Snowfall</u>		
January	<u>1.35</u>	<u>1.90</u>	<u>25.05</u>	<u>41</u>	<u>-23</u>
February	<u>2.55</u>	<u>1.84</u>	<u>40.70</u>	<u>44</u>	<u>-16</u>
March	<u>.73</u>	<u>2.02</u>	<u>1.60</u>	<u>58</u>	<u>- 9</u>
April	<u>4.13</u>	<u>2.53</u>	<u>4.00</u>	<u>63</u>	<u>6</u>
May	<u>3.35</u>	<u>2.98</u>	<u>_____</u>	<u>78</u>	<u>19</u>
June	<u>5.55</u>	<u>3.54</u>	<u>_____</u>	<u>86</u>	<u>36</u>
July	<u>1.03</u>	<u>2.41</u>	<u>_____</u>	<u>89</u>	<u>38</u>
August	<u>3.99</u>	<u>3.38</u>	<u>_____</u>	<u>90</u>	<u>34</u>
September	<u>4.02</u>	<u>3.62</u>	<u>_____</u>	<u>79</u>	<u>36</u>
October	<u>3.56</u>	<u>2.69</u>	<u>T</u>	<u>77</u>	<u>27</u>
November	<u>1.41</u>	<u>2.95</u>	<u>25.00</u>	<u>66</u>	<u>14</u>
December	<u>2.65</u>	<u>2.44</u>	<u>64.00</u>	<u>45</u>	<u>- 5</u>
Annual Totals	<u>34.32</u>	<u>32.30</u>	<u>160.35</u> Extremes	<u>90</u>	<u>-23</u>

* Based on a twenty year average (1949 - 1968)

Weather

The new year started off cold and snowy with sub-zero temperatures in January and especially during February. Snow fell on the first ten days of January and on 18 days of the month. February snow totaled 40.7" after falling on 23 of the 29 days. Generally, by Upper Peninsula standards, the winter was fairly open with total '67-'68 winter snowfall of 120" compared to 169" for the '66-'67 winter.

March was unusual for its lack of precipitation even though moisture was recorded on ten days. With the warmer days of mid-March, run-off began about March 26-27 (water started to appear on the pool ice on March 28) with a peak on March 31-April 1. Most snow was gone by April 5 and from the drifts by April 10. Pool ice was nearly gone by April 5 and the last left the bays on April 15.

The last freezing spring temperature of 32° was recorded on May 22; same date as last year. Late spring and early summer (April-May-June) were soggy with moisture recorded on 50 out of 91 days (20 days in June!). With the exception of July, the remainder of the summer and early fall were wet. Rain fell nearly every day for ten days in mid-August and every day on the first ten in September.

The first killing fall frost of 29° was recorded on October 21 compared to September 10 a year ago. However, as usual, a frost killed the buckwheat on the West Walsh Farm on August 17. Last year it got the same crop on the same farm on August 4. This is located 12 miles northwest of the headquarters weather station. In contrast to the nearly monthly frosts on the peat farms on the north end of the refuge, 151 frost-free days were recorded at headquarters. This compares to 111 in 1967 and 106 in 1966 -- normally we can expect 75-85 such days.

The first trace of snow was observed on October 4, but no measurable amounts appeared until November 8, and finally on November 17 it came to stay. Nearly 18" fell during the four days, November 17-20, with 10.5" coming on the 19th. In all, 25" of snow fell in November. Pools first froze over November 11, reopened in the centers later, and finally froze again on November 17.

December greeted us with additional "white stuff" and assured a White Christmas. Snow fell on 23 days finally totaling 64" for the month. Thus the early part of the winter of '68-'69 started off with a snow fall of 89". This is compared with 48" for the fall of '67 and 77" for the fall of '66. Total snowfall for calendar year 1968 was 160" compared to 140" in 1967.

As of December 31 snow accumulation on the ground was 18.5" compared to 6" at the end of '67; 18" in '66; 0.5" in '65; 20" in '64 and

13" in '63. Sub-zero temperatures were recorded on 27 days in 1968 compared to 30 days in 1967.

In summary: A rather mild winter of '67-'68 with average snowfall, an "open" winter and an average spring run-off. The summer was wet with a longer than average frost free growing season -- except on the north peat farms. Fall weather was beautiful, but moist, and it ended abruptly with heavy snows in November and December. Total 1968 precipitation was 34.32" (normal 32.30" based on 20 years).

B. Habitat Conditions

1. Water

The spring break-up and run-off occurred rapidly around March 31-April 1, a few days earlier than last year. No unusual problems due to run-off were encountered and all excess water was easily passed through the pool system or by-passed down the Driggs River.

Due to the abundance of rainfall, our major difficulty this year was attempting to maintain lower summer levels. Little water was diverted from the Driggs River to maintain pool levels as run-off from frequent rainfalls provided more than enough.

All pools were raised in early spring and held at or near maximum, as waterfowl nesting began, in order to keep mammalian predation to a minimum. Water was lowered toward the end of June to summer levels. D-1 Pool was only partially drawn down because of an excess of runoff and the inability of the present outlets to handle the heavy volume. However, on several occasions during the summer, the level was reduced and both vegetation and waterfowl responded favorably. B-1 Pool was drawn down in August to facilitate repairs to the water control structure. Only the west end of the pool emptied as a sand ridge effectively holds water in the east end. A slightly lower than approved level was maintained during late summer and early fall in H-1 Pool to facilitate waterfowl trapping. The Upper Goose Pen Pool was drawn down, the bottom aerated and reflooded several times in order to reflood the Lower Goose Pen. The Lower Goose Pen Pool was in partial draw-down from mid-August through September to allow discing and planting of nine acres of the upper pool bottom adjacent to the sub-headquarters farm field to rye. A-2 Pool was drawn down at the end of June and remained so through December. Aeration of the bottom, millet seeding experiments and net trap site construction were objectives. Marsh and Delta Creek Pools were lowered, nearly to the point of complete draw-down, beginning in November. This was to facilitate forest inventory, jackpine sawfly damage survey, timber cruising and possibly timber harvest access during the winter in the areas lying north of Marsh Creek and west of Delta Creek Pools.

Unusually high water levels were noted in the spur pools of Riverside

Dike during October and November. Reducing the flow from C-3 Pool into this area by increasing the flow from C-3 into Walsh Creek and lowering Delta Creek should reduce the pressure on the Riverside and Spur dikes.

Permanent freeze up occurred during the week of November 17.

2. Food and Cover

Goslings had excellent browse early on the dikes, then the headquarters and visitor center lawns. The small grazing sites established along the dikes and at D-1 are developing well and were also used.

Geese used all the farm areas heavily. In contrast to 1967 when the dry summer held back hay regrowth on the north farms, all mowed hay fields were lush this year. Oats with new seedings were especially favored as was 20 acres of buckwheat rotary mowed at Conlon. Green fall rye received heavy use at Sub-headquarters, West Walsh and Diversion and an experimental fall wheat seeding at West Walsh was nearly decimated.

Diversion and West Walsh Farms hosted a multitude of wildlife. Over 250 greater sandhills used the ripe rye and new seedings at Diversion and up to 70 on the Walsh during the fall. Several thousand geese utilized every crop at Diversion and at times the 55 acres of West Walsh disappeared under the hungry chomping of up to 1,800 birds. Two female black bear, one with two cubs and the other with a yearling, were observed early in the summer grubbing in Diversion while two bear sightings were made at Walsh. Here they were feeding on the oats.

Deer, of course, utilize all the farm fields, but 75 were seen on the Chicago Farm several days prior to the deer hunting season. The '67-'68 winter was easy on deer contrasted to the early rough '68-'69 winter with 89" of snow by December 21. Deer were forced into the yards several weeks earlier than normal. Only a mid-winter thaw or a slow down in the snow accumulation can prevent serious losses in yarding areas, located off the refuge, this coming winter.

Nearly all except the Unit II pools had excellent aquatics. Favorites remain F-1 and E-1 for geese and baldpates with J-1, I-1 and M-2 receiving heavy use by Ringnecks.

Forest cuttings finally getting underway after several years of inventory should improve deer summer range, grouse habitat and create much needed openings in scattered areas.

II. WILDLIFE

A. Migratory Birds

1. Geese. The first Canada geese, a flock of three, were observed over headquarters on March 15. Pools were completely frozen over at the time and there was approximately 13 inches of snow on the ground. No other geese were observed until March 17. The March 15 arrival date is about average and four days earlier than 1967.

Between March 17 and April 1, geese increased from 35 to approximately 950. A final count of returning Seney geese was made on April 18 with a total of 1,100 recorded. This is almost 400 more than in 1967.

Egg laying began about April 1 and incubation started around April 7, about a week earlier than last year. The first brood was observed on May 6, compared to May 11 last year and May 9 in 1966.

An intensive check of islands for nests was conducted from April 27 through May 1. Active nests were rechecked again from May 21 through May 31. Table 1 compares the results.

Year	Nests Destroyed		Nests Deserted		Nests Unhatched		Nests Hatched		Total Nests No.	**
	No.	%	No.	%	No.	%	No.	%		
1963	43	24	11	6			127	70	181	*
1964	90	38	7	3			138	59	235	
1965	61	27	12	5	2	1	152	67	227	
1966	57	24	6	2	2	1	174	73	239	
1967	18	9	8	4	11	5	176	82	213	
1968	12	6	7	3	2	1	190	90	211	

Year	Eggs Destroyed		Eggs Deserted		Eggs Unhatched		Eggs Hatched		Total Eggs	
	No.	%	No.	%	No.	%	No.	%		
1963	197	22	47	5	43	5	609	58	896	
1964	410	37	25	2	59	5	627	56	1,121	
1965	267	25	43	4	92	8	676	63	1,078	
1966	190	17	29	3	78	7	818	73	1,115	
1967	60	5	33	3	122	11	912	81	1,127	
1968	54	5	38	3	44	4	1,022	88	1,158	

** Includes nests estimated missed.

* Not all pools checked -- sample expanded

Nest depredation reached a record low this year. Predators destroyed 12 nests (6%) and 54 eggs (5%) in 1968 (crows were responsible for destroying eggs during the laying period). No nesting geese were known to have been killed.

Total eggs hatched numbered 1,022 compared with 912 in 1967. Severe losses of goslings, due to the blood disease Leucocytozoon, occurred during June. It is estimated that 70-80 percent of this year's production succumbed with, perhaps, 250 goslings surviving to flight stage. This will be discussed further in the Disease Section. The fall population of the resident flock prior to migration was estimated at 1,300 birds.

Fall migrant Canada goose numbers were up this year, however, numbers of Blues and Snows were low. The peak fall Canada goose population reached an estimated 8,000 birds during the week of October 6-12.

The first flock of Blues and Snows were seen over Germfask on October 5. Other scattered sightings indicated a general migration October 23 through November 7 with the heaviest movement November 6-7 when five separate flocks of more than 100 birds each passed over. The last flight was observed on November 16-17. Only 10 birds were seen on the refuge (6 at Diversion Farm). One Blue joined the resident Canadas at headquarters lawn on November 1. Normally 100 each of Blues and Snows usually stop for awhile.

Fall goose use days totaled 371,240, an increase of approximately 130,000 over 1967. This increase might be attributed to the excellent condition of refuge farm fields and a mild fall which prevented the pools from freezing up at an early date.

About 500 geese were on hand at the end of November with most departing on November 29. The last flock of 31 birds was observed on December 5. Three geese, two wounded, remain at I-F spillway.

Table 2 compares the goose populations and use-days by periods for 1963 through 1968. (See page 7)

2. Ducks. Spring migration was more than a week earlier than in 1967. Peak population of 1,870 birds was recorded April 15-21 compared to 1,240 birds on April 30, 1967. All species occurred in normal numbers with Ringnecks the most numerous. They peaked at 500 from April 22 through 30.

This year, in connection with the Ringneck duck nesting study, we attempted to once again gather breeding pair information. During the past several years of heavy emphasis on the goose flock little meaningful information relative to duck breeding populations had been collected. Perhaps after several years of running a standardized census route comparative pair data on all species can be obtained.

Table 2. Comparison of Waterfowl Peak Numbers and Days-Use Data, 1963-1968 Calendar Years

Period	Species	1963		1964		1965		1966		1967		1968	
		Days Use	Peak Numbers										
Spring (Jan.- Apr.)	Swans	90	7	72	5	7	1	2	2	49	5	206	10
	Geese	20,700	750	34,116	1,100	15,853	800	21,553	550	19,970	700	32,445	1,100
	Ducks	29,000	1,420	36,315	2,200	25,103	2,148	29,645	1,410	23,545	1,240	46,699	1,870
	Coots	0	0	35	5	20	6	35	5	49	5	210	10
	<u>Total</u>	<u>49,790</u>		<u>70,538</u>		<u>40,983</u>		<u>51,235</u>		<u>43,613</u>		<u>79,560</u>	
Summer (May- Aug.)	Swans	189	7	25	2	44	2	84	2	0	0	0	0
	Geese	132,200	1,200	102,364	1,200	122,000	1,225	129,850	1,300	143,650	1,450	163,550	2,000
	Ducks	179,313	1,600	220,788	2,365	157,624	1,595	172,935	1,540	172,650	1,600	197,500	1,960
	Coots	0	0	50	10	15	5	42	2	0	0	740	10
	<u>Total</u>	<u>311,702</u>		<u>323,227</u>		<u>279,683</u>		<u>302,911</u>		<u>316,300</u>		<u>361,790</u>	
Fall (Sept.- Dec.)	Swans	35	5	175	21	42	2	70	5	28	2	28	4
	Geese	309,281	4,650	334,950	7,000	234,486	4,650	217,715	5,275	241,150	6,000	371,310	8,010
	Ducks	244,437	4,900	333,909	7,020	226,835	6,125	199,365	5,460	341,915	13,070	380,095	12,900
	Coots	6,139	200	1,015	30	955	50	1,302	50	2,240	90	16,310	600
	<u>Total</u>	<u>559,892</u>		<u>670,049</u>		<u>462,318</u>		<u>418,452</u>		<u>585,333</u>		<u>767,743</u>	
Total	Swans	314		272		93		156		77		234	
	Geese	462,181		471,430		372,339		369,118		404,770		567,305	
	Ducks	452,750		591,012		409,562		401,945		538,110		624,294	
	<u>Coots</u>	<u>6,139</u>		<u>1,100</u>		<u>990</u>		<u>1,379</u>		<u>2,289</u>		<u>17,260</u>	
GRAND TOTAL	921,384		1,063,814		782,984		772,598		945,246		1,209,093		

Duck production is estimated at 1,960 birds compared to 1,010 last year. Brood counts was taken during the Ringneck study. Of interest is that only 5 Ringneck broods were observed in Unit I pools on July 29 this year while 38 were observed in the same pools on the same date one year ago. The nesting study indicated good nesting success thus other factors, such as Leucocytozoon, must have been responsible for the drop in observed production. Blood smears taken from Ringnecks during trapping operations and analyzed by Dr. Herman of Patuxent indicated that Leucocytozoon could very well have caused a die-off in Ringnecks this year as it did with geese (See Disease Section).

Hooded Merganser use of the duck nesting boxes continue to increase. Of 118 boxes, 43 or 36% were used by Hoodeds compared to 25% in 1967 and 17% in 1966. The nest box project is discussed in detail in the Field Investigations Section.

Table 3 below compares the peak fall populations from 1963 through 1968.

Table 3. Peak Fall Duck Populations by Species, 1963-1968

Species	1963	1964	1965	1966	1967	1968
Mallard	1,000	1,000	650	650	1,400	1,000
Black Duck	900	1,000	800	650	1,050	1,100
Pintail	0	15	5	10	10	15
Green-winged Teal	300	300	150	75	350	400
Blue-winged Teal	300	500	500	500	600	450
Baldpate	325	800	150	300	600	550
Woodduck	300	450	150	350	325	350
Redhead	15	10	10	0	15	120
Ring-necked Duck	3,000	3,200	4,500	4,000	10,000	9,300
Canvasback	0	0	0	0	5	0
Scaup	10	250	25	10	40	50
Goldeneye	50	50	50	75	40	75
Bufflehead	40	100	75	20	20	50
Hooded Merganser	250	150	150	100	300	300
Common Merganser	250	140	150	60	150	100

Peak number of 12,900 were recorded during the week of October 13-19 compared to 13,070 during the same week last year. Ringnecks peaked

at 9,300 during October 13-19 for 176,400 use-days; slightly less than the 10,000 peak during the same week in 1967 for a fall use-day total of 183,820. Seney may be developing into an important fall staging area for Ringnecks prior to southward migration.

Peak Redhead numbers were up slightly, but mallards and Blue-winged Teal were definitely off.

Last year most ducks were froze out after the first week of November while this year nearly a 1,000 were still on the refuge during mid-November. Overall fewer ducks stayed a little longer increasing fall use-days to an estimated 380,000 from 342,000 in 1967.

Table 2 (page 7) illustrates the annual duck picture for the years 1963 through 1968.

3. Swans. Twelve Whistling Swans were observed during the spring migration period. A group of seven was seen at the Lower Goose Pen Pool on April 2. On April 19 two cygnet swans were sighted on C-3 Pool. One of them was marked with yellow dye and had a wire (possibly an antenna) protruding at an angle from the center of its back. A yellow patch extended from the head, one-half way down the neck, then a 2-3 inch dark grey band, and then yellow again down to the chest.

An inquiry to Patuxent revealed that the bird was indeed "wired". About 9 swans using the wintering area in Chesapeake Bay were telemetered to study their local movements while on the wintering ground.

Four swans were seen on I-1 Pool on November 14 for the only fall record.

4. Coot. Never much of a "coot haven", about 10 were seen during the spring migration. An unusual gathering, however, occurred during the fall when a near record peak of 600 coot were noted from September 29 to October 12. The largest group, 400, spent about four weeks on E-1 Pool. Table 2 compares coot use and numbers for 1963-68.

5. Water and Marsh Birds. The first returning Common Loons were seen April 12, one day earlier than in 1967. Fourteen pair nested on the refuge and raised 18 young. The first brood was observed June 17, two weeks later than in 1967. The refuge population was estimated at 50 at the end of the summer. The last recorded loon observation was on October 17.

Sandhill Cranes were first observed on March 29, three days earlier than last year. They were observed frequently during the year, but population estimates are mere guesses. The estimated total population, following the hatch, was 250. During the latter part of

the summer and early fall, sandhills made excellent use of refuge farm fields. Flocks of 40-50 on several fields were common and on September 5 over 200 sandhills were observed on the Diversion Farm field. The last recorded observation was on October 9.

Great Blue Herons were first noted on April 2. Their peak numbers were estimated at 125.

Pied-billed Grebes were observed at frequent intervals. The first sighting occurred on April 18. An estimated 50 were using the refuge by fall. The Horned Grebe and Red-necked Grebe, both relatively rare at Seney, were also noted on a few occasions this year.

American Bitterns were noted from time to time by refuge personnel. An estimated population of 150 were using the refuge by September.

Several sightings were obtained on the Green Heron during the summer.

6. Shorebirds, Gulls and Terns. The first Wilson's Snipe was noted on March 27, as was the first Killdeer. Other shorebirds and gulls that were observed on the refuge during the year included Herring Gulls, Yellowlegs, Spotted Sandpipers, Black Terns, Common Terns, Semi-palmated Plovers, Upland Plovers, Baird's Sandpipers, Ring-billed Gulls and Caspian Terns.

B. Upland Game Birds

1. Woodcock. The table below compares the two established Woodcock singing-ground survey routes on the refuge. Each route is standard: that is, 3.6 miles long with 10 stops.

Table 4. Comparison of Males Counted on Woodcock Singing-Ground Survey -- Seney Refuge.

Year	(No. 39) Sub-headquarters		(No. 37) Driggs River		Total
	Date	No.	Date	No.	
1968	5/19	3	5/18	29	32
1967	5/8	16	5/13	33	49
1966	5/11	4	5/10	32	36
1965	5/4	1	5/10	26	27

A summer student project about Woodcock is discussed in the Field Investigations section.

The last major fall flight was noted the last part of October. Cold, wet weather after that pushed them south.

2. Sharp-tailed Grouse. Spring dancing ground counts were conducted from April 27 through May 13 with most grounds counted on April 30 and May 1 with follow-up counts on May 14. In that most activity and the spring arrival was a week to ten days earlier than usual we may have missed peak activity on the grounds.

This year 10 grounds, all located on the refuge, were checked compared to a total of 16 last year which included 10 on and 6 off the refuge. In order that we might more intelligently evaluate the trend in the Sharp-tailed population some effort is now going into compiling a cumulative record sheet of all spring dancing ground census activity that has occurred these many years on and near the refuge. It is essential that this evaluation take place before we can put into effect control burning and other game and forest management practices to enhance and perhaps increase desirable habitat for this game bird.

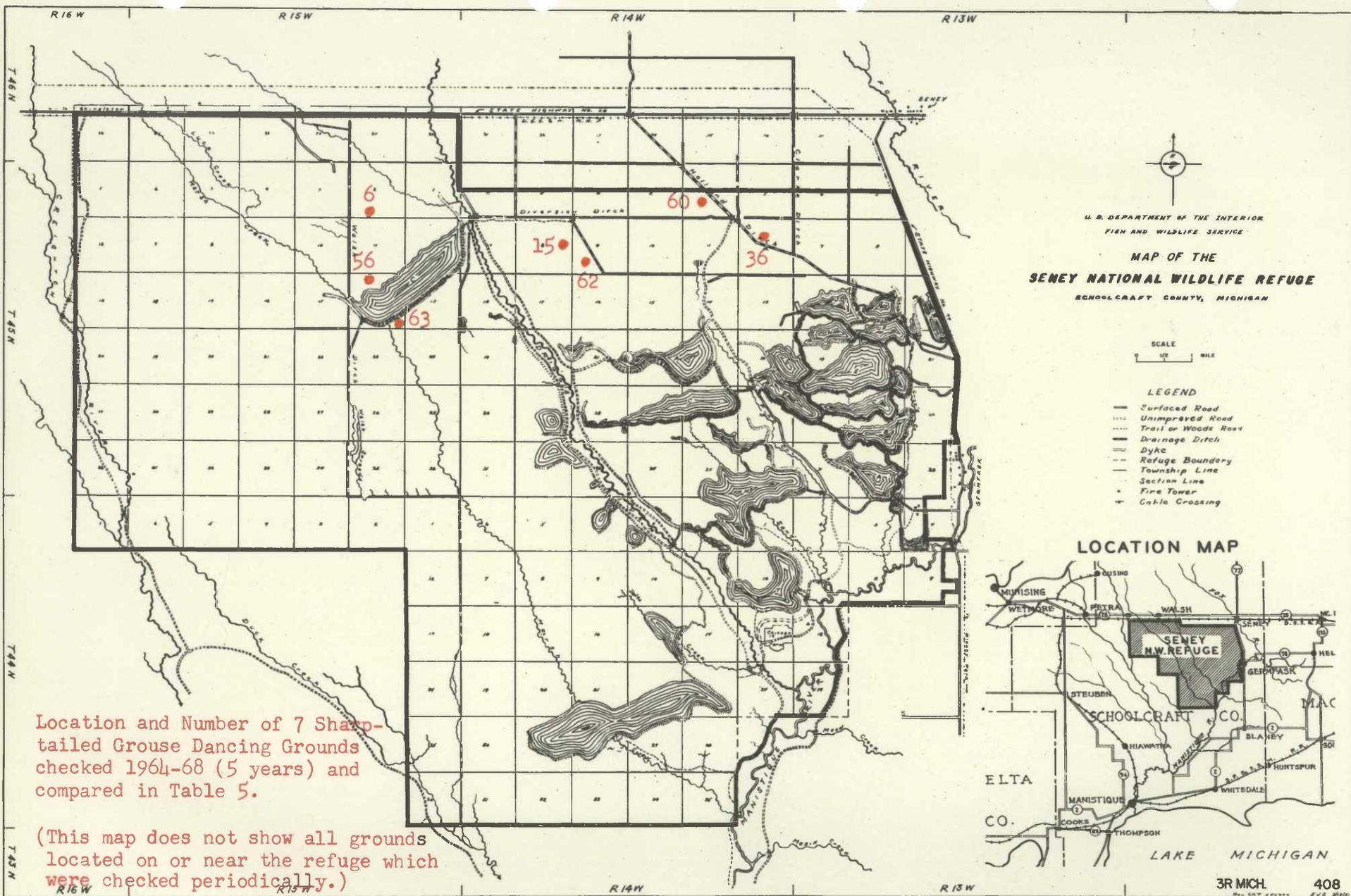
As a start to this evaluation the following table is presented (and map) comparing seven grounds which have been censused every year (1964-68) for the past five years. It appears that more effort should go into these counts to eliminate as many of the unknown birds as possible.

Table 5. Comparison of Seven Sharp-tailed Grouse Dancing Ground Counts Conducted Each Year (1964-68) For Five Years.

<u>Year</u>	<u>Male</u>	<u>Female</u>	<u>Unknown</u>	<u>Total</u>
1968	36	10	8	54
1967	45	4	8	57
1966	46	19	9	74
1965	46	10	28	84
1964	41	13	17	71

Table 5 is from data on grounds No. 6-15-36-56-60-62-63. (No. 62, new ground in 1965 -- believe it a split-off of No. 15.)

Based on ground counts and other observations it appears that the population is down (see Hunting Section). We estimate the refuge numbers at about 200, a substantial drop from last year.



Location and Number of 7 Sharp-tailed Grouse Dancing Grounds checked 1964-68 (5 years) and compared in Table 5.

(This map does not show all grounds located on or near the refuge which were checked periodically.)

3. Ruffed Grouse. Population appears down (See Hunting Section) based on sightings and general observations. Last year we saw 8 broods; this year 4. A wet, cold spring when the birds were incubating definitely hurt the reproductive effort through most of this part of the Upper Peninsula. Fall numbers are estimated at 1,300.

4. Spruce Grouse. Sightings on this beautiful but "fool's hen" were quite numerous by refuge staff members throughout spring, summer and fall. Six broods were seen this year compared to four last year. Numbers are estimated about 125. Many birders ask where they can see this bird on the refuge. In some cases we are able to accomodate them, but usually sightings are too infrequent to be certain of a sighting in a particular area when we'd like it.

C. Big Game Animals

1. White-tailed Deer. The first observation was made march 25, eleven days earlier than last year. A relatively mild 1967-68 winter did not create undue hardship on the deer and they appeared to be in excellent shape.

The first fawn sighting occurred on June 3, just one day later than in 1966. Deer observations during the first half of April totaled 102 deer seen for 85 man-hours in the field. This gives an average of 1.20 deer seen per man hour in the field. An average of 1.28 deer per man-hour in the field was calculated during May and June last year, indicating no major changes in sightings.

Weather of early fall and winter put little pressure on the deer, but continued accumulations of snow sent them to yards 3-4 weeks earlier than normal. Unless a mid-winter thaw or slackening of the snowfall occurs, deer are in for a rough winter.

2. Black Bear. Observations increased for the fourth consecutive year. Twenty-one sightings by refuge personnel were recorded this year as compared with 14 sightings in 1967 and 10 in 1966. One bear was taken during the refuge big game season. The estimated refuge population during the period of greatest use was 35.

3. Moose. We received word that a Moose was seen several times on the Old Seney Road east of the refuge. Refuge personnel did not see the moose but tracks, undoubtedly from a different animal were seen on the Manistique River Road south of Meed Creek. Tracks with the same measurements were seen along Pine Creek Road to D-1 Outfall on September 24 and then along M-2 dike. Later in December several sightings again occurred east and south of Seney. Moose are rare in this area although a number have been killed in the vicinity over the years.

D. Fur Animals, Predators, Rodents and Other Mammals

1. Otter. Over 300 sightings were made during the year. The total refuge population is estimated at about 150 animals, although this may be a rather conservative estimate based on the number of observations. Otter trapping on the refuge has been closed since 1960.

2. Beaver. Numbers have been increasing over the years and although they have created excellent waterfowl habitat in some areas, they have created problems in other areas. As reported in the 1967 narrative, a beaver removal program was proposed for 1968. Results are reported in the Fur Harvest Section.

An inspection of Diversion Ditch, from the Driggs River to Holland Ditch this fall, revealed three old dams (which were removed) and no new sign of beaver work.

3. Muskrat. No noticeable increase. There appeared to be less activity in the marsh below C-3 than last year. Permittee mink trapper took 18 rats.

4. Mink. Mink were primarily responsible for destroying 57 captured ducks during this year's banding operations. Twenty mink were caught by the refuge permittee trapper.

5. Woodchuck. Woodchucks were frequently observed from the first sighting on March 10 through late July or early August. They are rarely seen from the latter part of August until freeze-up. A family of woodchucks that set up housekeeping under a red pine near the Visitor Center entrance provided a lot of entertainment for summer visitors.

6. Striped Skunk. Numbers appear to be about the same as last year. Only four skunk observations were recorded this year. Twelve skunks were removed (two by refuge personnel, ten by refuge trapper). This is the same number that were removed last year.

7. Wolves. A visitor to Seney reported seeing a Gray Wolf near Blaney Park (10 miles south of the refuge). This observation could not be confirmed, however.

8. Snowshoe Hare. These animals were observed frequently during the year.

9. Other Mammals. Other mammals observed throughout the year include Red and Gray Squirrels (including a few of the melanistic phase), Least and Eastern Chipmunks, various mice and voles, Porcupine, Fox and bats. Bats, living in the attic of the guest cabin created havoc for a few days while Dr. Tarshis

and his family were living there in the spring. Carbon monoxide fumes were used to solve the problem.

Refuge predators include Coyote, Fox, Bobcat and Raccoon. Fox and Bobcat numbers are not high and they have not been much of a problem. Coyote numbers seem to have been reduced somewhat by the animal control program over the past several years and have not caused the serious waterfowl losses that they did in 1964. Raccoon numbers are relatively high however. Although they did not cause much damage to this years goose production, they were quite evident during the duck banding operations. Table 6 summarizes the results of the animal control program for the past three years.

Table 6. Summary of Predator Removals, 1966-68

Species	1966			1967			1968		
	Permittee	Refuge	Total	Permittee	Refuge	Total	Permittee	Refuge	Total
Snapping Turtle	117	25	142	0	50	50	2	30	32
Raccoon	21	35	56	35	13	48	33	24	57
Coyote	26	2	28	22	2	24	28	0	28
Skunk	4	3	7	7	5	12	10	2	12
Porcupine	1	7	8	5	9	14	7	0	7
Bobcat	6	0	6	3	0	3	3	0	3
Fox (Red)	0	1	1	5	5	10	5	1	6
Weasel	0	0	0	1	0	1	0	0	0
Totals	175	68	243	78	84	162	88	57	145

E. Hawks, Eagles, Owls, Crows and Ravens

The Marsh Hawk was the most abundant hawk on the refuge. Rough-legged Hawks were relatively common in the fall. Several observations of Broad-winged Hawks were made and Red-tailed, Red-shouldered, Cooper's and Sparrow Hawks were observed on occasions. Several Osprey sightings were made and in one case an Osprey was seen making a fairly close pass at an adult Bald Eagle that was sitting in a tree.

Sightings of several Osprey near the Walsh Spreads south of C-3 during the spring raises our hopes that we may find them nesting in some isolated part of the refuge. Thus far we know of no nesting on the refuge.

Bald Eagles remain at a low level, though they seem to be holding on. Five territories were occupied during 1968, however nesting and egg-laying occurred in only two cases. The pair at E-1 Pool hatched a single eaglet and it was observed frequently until the middle part of the summer. Apparently something happened because activity around the nest ceased almost completely except for a few instances when one of the adults was observed near the nest.

The pair at C-2 Pool, however, produced two eaglets which reached flight stage. For the third consecutive year a pair returned to C-3 Pool, one of the pair in immature plumage. Last year another pair with one bird in immature plumage claimed a territory at B-1 Pool but this year both birds were in adult plumage. They were observed around the nest all summer, but apparently no eggs were laid. A pair was observed frequently near a nest on M-2 Pool but again, did not produce any eggs.

An immature Bald Eagle was found dead in the water of C-1 Pool on May 12 by one of the summer students. The bird was banded and subsequent inquiries revealed that it had been banded as a nestling on July 10, 1966 near Red Lake, Ontario by James W. Grier of the University of Wisconsin.

The bird was sent to Patuxent but it proved to be so nearly decomposed that it could neither be necropsied nor analyzed for pesticide content.

Several interesting observations of eagles were made during the year on Upper F-1 Pool from the Refuge Office. On one occasion an adult Bald Eagle was noted making three passes at a Ring-necked Duck near headquarters. The duck dove underwater each time and successfully eluded the attacker. A similar attack on a Woodduck adult drake ended similarly a few weeks later. On another occasion Clerk Doran watched an eagle strike a Great Blue Heron and knock it down. The eventual fate of the heron was undetermined.

The last eagle observation of the year was made on December 17.

Snowy Owls were observed several times during the first months of 1968. Two were seen on January 2, several other sightings occurred in February and the last observation was on March 1.

Crows were abundant in the spring and destroyed some goose eggs. Approximately fifty crows were captured in late March near head-

quarters with a cannon net. They were shipped by air freight to Patuxent for use in various experimental studies. Ravens were observed frequently throughout the refuge although they are not too numerous.

F. Other Birds

Spring arrival dates of some of the other birds, as recorded by refuge personnel, are shown in Table 7.

Table 7. Spring Arrival Dates of Birds at Seney Refuge -- 1968

<u>Date</u>	<u>Species</u>	<u>Date</u>	<u>Species</u>
3-17	Grackle	4-22	Mocking Bird
3-17	Red-winged Blackbird	5-2	Barn Swallow
3-21	Mourning Dove	5-6	Brown Thrasher
3-25	Robin	5-6	Hermit Thrush
3-25	Yellow-shafted Flicker	5-16	Goldfinch
3-27	Killdeer	5-17	Eastern Kingbird
3-28	Meadowlark	5-17	Bob-O-Link
4-8	Cowbird	5-30	Cedar Waxwing
4-15	Purple Martin	5-31	Baltimore Oriole
4-18	Myrtle Warbler	6-23	Cliff Swallow

A wide variety of small passerine birds occupy the many habitat niches at Seney during the summer. Tourists from many parts of the nation come to Seney expressly for birdwatching.

Results of the 1968 Christmas Bird Count, conducted by Manager Wilbrecht and Assistant Manager Elias, on December 20, are presented in Table 8.

Table 8. Results of Christmas Bird Count -- December 20, 1968

<u>Species</u>	<u>Number</u>	<u>Species</u>	<u>Number</u>
Canada Goose	2	Black-capped Chickadee	26
Barred Owl	1	White-breasted Nuthatch	1
Hairy Woodpecker	1	Starling	19
Downy Woodpecker	2	House Sparrow	150
Blue Jay	1	Pine Grosbeak	8
Common Raven	25	Common Redpoll	30
Common Crow	10		

Totals: 14 species -- 406 individuals

G. Fish

Fishery biologists from the Michigan Department of Natural Resources removed fish from a number of refuge pools during April (Table 9). The pike catch was slightly less than half that of last year as the State needed fewer for their spawning marshes.

In accordance with the cooperative agreement, 20% of the legal sized pike (70) were released in the Show Pools along with 525 yellow perch, 95 bullheads and a few sunfish. The remaining pike were released in nearby spawning marshes and lakes (Table 10). The remainder of captured fish were either returned to the pools or thrown up along the refuge dikes and islands for eagles and other birds.

A representative of WWUP-TV, Channel 10, Sault Ste. Marie, Michigan accompanied the fish biologists on April 10 to obtain information and footage for later broadcasting.

Table 9. Fish Removal Record From Refuge Pools -- 1968

Date	Species Removed				
	Northern Pike	Yellow Perch	Bullheads	Sucker	Other
4-2	14	50	15		6
4-3	50	85	68		8
4-8	84	11	250		5
4-9	50	144	140	8	4
4-10	49	152	425	7	12
4-12	88	92	382	22	7
4-15	32	203	421	30	4
Totals	367*	737	1,701	67	46

* This total does not include 26 northern pike that were discarded due to disease or netting mortality.

Northern Pike removal by pools was as follows: B-1, 60; D-1, 5; E-1, 137; G-1, 1; H-1, 16; J-1, 6; M-2, 5; Holland Ditch at J-1 Pool, 103; ---- Total 367.

 Table 10. Plantings of Pike Taken From Refuge Pools -- 1968

<u>Date</u>	<u>Number</u>	<u>Location</u>
4-3	30	Macaulay Marsh
4-3	4	Refuge Show Pools
4-8	52	Macaulay Marsh
4-8	30	Refuge Show Pools
4-9	17	Macaulay Marsh
4-9	5	Refuge Show Pools
4-9	43	Stueben Pike Marsh
4-12	23	Refuge Show Pools
4-13	65	Pike Lake
4-20	8	Refuge Show Pools
4-20	90	Kenny Lake

H. Reptiles and Amphibians

The first Painted Turtle observation of the year was made on March 28. Painted Turtles are numerous on the refuge but cause no harm and are enjoyed by the tourists.

The first sighting of a Snapping Turtle occurred on April 19. We believe these reptiles are predaceous on young goslings and ducklings so refuge personnel do make an effort to remove any they encounter during the course of their work. A permittee was allowed to do some turtle trapping this year, however, he got started rather late in the season and only managed to take two snappers. In all, 32 snappers were removed from the refuge this year compared to an estimated 50 in 1967.

Numerous frogs, a few salamanders and a few snakes were observed during the summer.

I. Disease

1. Leucocytozoon Die-Off. This problem is discussed under Field Investigations, Section V.
2. Loon Die-Off. Once again the botulism die-off of loons, gulls, grebes and other water birds has hit the northern

Lake Michigan shoreline. First discovered in 1963 and occurring apparantly each year since, it is estimated that about 3,000 loons alone are lost here each year.

The die-off this fall was first brought to our attention during the first week in October when State Biologist Salo from Manistique and Manager Wilbrecht inspected a 7.5 mile stretch of beach south of Gulliver. The results were as follows:

<u>Species</u>	<u>10-09-68</u>	<u>10-18-68</u>	<u>10-29-68</u>
Common Loon	129	225	281
Herring Gull	12	13	19
Ring-bill Gull			1
Common Merganser	1		
Horned Grebe		1	
Red-neck Grebe		1	1
Unidentified Grebe	2		
Old Squaw			1

It should be noted that only a few birds were picked up and sent in to Rose Lake and Patuxent. Thus the same birds were counted each time plus new mortality. Overall we estimate at least 300 loons died along this 7.5 miles of beach.

Interestingly an oil spill was noted about the same time. However, from all our observations we believe the oil had little effect on the birds as most had already succumbed to botulism. A more comprehensive report on the entire investigation will be forwarded to the Regional Office sometime before spring.

There is little doubt the loon die-off is serious. How a population with such a small reproductive effort can maintain itself under such a continuous loss and just where they come from we don't know.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development1. Buildings and Grounds

- a. New counter top on cabinets at Qtrs. #137.
- b. Electric base-board heater installed in Qtrs. #1 den-bedroom.
- c. New security light at office building.
- d. Fibre-glass doors installed at Auto Shop.
- e. Underground sprinkler system installed in Visitor Center lawn.
- f. Remove top soil and plant trees at Sub-headquarters and Conlon Farms.
- g. Put up new drapes and shades in Guest Cabin.
- h. Paint all buildings at Sub-headquarters.
- i. Repair eaves and chimney on Sub-headquarters garage.
- j. New roofing on barracks.
- k. New toilet vaults and move toilets at Driggs Picnic Area.
- l. Puttied and painted all windows at Auto Shop.
- m. Darkroom remodeled.
- n. Caulk Visitor Center, paint trim and coat bricks with waterproofing.
- o. Haul top soil and gravel to Wigwam Picnic Area and seed lawn.
- p. Repair stone building doors.
- q. "Bone-yard" cleaned and straightened.
- r. Headquarters and Driggs dumps covered (now use Seney Township dump).

2. Roads and Trails

- a. Remove turn-out at junction of M-77 and entrance road and remove blacktop apron.
- b. Gravel C-3 parking area.
- c. Place 2 culverts on Driggs River Road and 1 at T-2 Pool.
- d. Oiled entrance roads (main road - 3,500 gallons; north road - 2,000 gallons), Guided tour route (4,500 gallons) and Driggs River Road to C-3 Pool (2,000 gallons).
- e. Brush Marsh Creek Road -- Riverside Dike north.
- f. Refinish, reroute both sides, turn, move and erect large entrance sign. Place directional and informational sign at entrance.

3. Equipment Repairs (Major)

- a. TD-14 cylinder head, rebuilt.
- b. Bucyrus-Erie dragline was fitted for use.
- c. Replace head on IHC Travelette.

- d. Put circle-reverse gears, received from DeSoto Refuge, in Austin-Western Grader.
- e. Put new sprockets on John Deere 420.

4. Water Facilities and Habitat

- a. B-1 Pool structure repaired.
- b. Replaced running planks on J-H spillway.
- c. Brush east end of B-1 dike.
- d. Dragline 2,630 feet of new ditch southeast Diversion Farm and clean 1,840 feet old ditch.
- e. Two stump piles removed Chicago Farm and Walsh Farm fields.

5. Equipment Acquisitions and Disposals

Acquisitions

- a. New Western Snow Plow.
- b. New John Deere 4020.
- c. New 17 foot tandem disc, with wings.
- d. New stove Qtrs. #136.
- e. TV towers and antennas (Qtrs. #136 and 137).
- f. New Royal 660 electric typewriter.
- g. New fibre-glass garage doors purchased for office and auto shop.

Disposals

- a. Fireline plow -- GSA Sale.
- b. Two assault boats -- H.E.W.
- c. Brush plow, John Bean pump, portable welder, grain drill, refrigerator and electric stove.-- GSA Sale.
- d. Two "Jiggers" -- GSA Sale.
- e. Caterpillar 212 Grader -- Squaw Creek.
- f. Rotary floor sweepre, 40 fibre-glass floats -- DeSoto Refuge.
- g. Gas range -- LaCreek Refuge.
- h. Weston Master II Exposure Meter -- Tewaukon Refuge.
- i. D-6 picked up at Kincheloe AFB -- transfer to Squaw Creek.
- j. Anderson snow plow -- Sold Newberry Truck and Implement Co.

B. Plantings

1. Aquatic and Marsh

- a. Wildrice. Eight hundred pounds of rice picked up at Tamarac Refuge was planted to 15 acres in seven pool locations on September 14. This trial was made in an effort to once again evaluate the ability of this plant to survive the deer, muskrats and water conditions of our pools. Last seedings were made in 1958. Only one (west end C-1) proved partially successful as deer and rats

(perhaps geese too) clobbered the sprouts. A summary of the plantings are on form NR-7

b. Jap Millet. Student Fjetland hand seeded 200 pounds to several sites during early July as an experiment. See Field Investigations Section of Narrative.

2. Trees and Shrubs

A total 5,600 trees, 4,000 Red Pine and 1,600 White Spruce, were planted in two locations by members of Boy Scout Troop 124 of Newberry and the 4-H Club of Germfask. A donation of \$45.00 was made to the Boy Scout Troop which had 18 scouts planting and \$25.00 was donated to the 4-H Club which had 6 boys planting.

Four thousand seedlings were planted on four acres at Conlon Field and 1,600 on two acres at sub-headquarters field to serve as buffer strips along public roads. These buffer strips should minimize disturbances to geese grazing in the fields and lower the possibility of illegal deer kill by shining.

Specimens of many of the tree species that occur on the refuge were planted around the Visitor Center for area beautification and to be used for "basic dendrology classes" for visiting school groups. Species planted were tamarack, balsam fir, white and black spruce, trembling aspen, white birch and red maple.

3. Upland Herbaceous Plants

Prior to setting the tree seedlings to the 2 acre sub-headquarters site, stripped of top soil, the following mixture (and pounds of each) was scattered and disced in on May 3: Lincoln Smooth Brome, 44 lbs.; Perennial Rye grass, 25 lbs; Grasture - Orchard grass, 6 lbs; and Creeping Red Fescue, 6.5 lbs. The "catch" of this cover crop was good.

4. Cultivated Crops

Table 11 summarizes the farming and haying operations for the year. Harry Prieskorn continues as our Cooperative Farmer on the Conlon, Chicago, Smith and Sub-headquarters Farms, working 232 acres. This keeps him pretty busy along with his own farming and cattle operation and sometimes puts him behind on the refuge work. But generally he is doing an excellent job of working refuge ground.

Jay Livermore remained as the haying permittee on the Diversion and Walsh Farms. This year 111 acres of hay were on the two farms with Jay cutting and raking half and baling it all for half the crop. The refuge farms 136 acres on Diversion and Walsh (includes the hay ground), 9 acres of Sub-headquarters (Lower Goose Pen Pool bottom) and 6 acres of lower Smith Field for a total of 204 acres.

Table 11. Summary of Acreages and Yields for each Crop by Farm Unit, Seney Refuge -- 1968

Farm	Hay		Oats w/Seeding		Buckwheat		Rye (Browse) (Planted 1968)		Rye (Ripe)		Wheat (Browse)		Fallow	
	Acres	Yield	Acres	Yield	Acres	Yield	Acres	Yield	Acres	Yield	Acres	Yield	Acres	Share
CONLON	20.0	50.0 T			20	400 bu								Coop. Refuge
CHICAGO	43.0 13.0	79.0 T 25.0 T	22.0	880 bu	9	90 bu							13.0	Coop. Refuge
SMITH	23.0	63.0 T												Coop. Refuge
SUB-HDQS.	54.0	105.0 T	15.0	540 bu			24	3.2 T						Coop. Refuge
DIVERSION	74.8 10.0	77.9 T 10.0 T	6.6	62 bu			5	.5 T	22.7	85 bu	3	.3 T	13.9	Coop. Refuge
WALSH	27.0	19.5 T	8.0	200 bu	9	45 bu	10	5.0 T	10.0	250 bu	5	1.0 T		Coop. Refuge
Coop Total	214.8 Ac	374.9 T	37.0 Ac	1,420 bu	9 Ac	90 bu	0	0	0	0	0	0	13.0 Ac	
Refuge Total	50.0 Ac	54.5 T	6.6 Ac	262 bu	29 Ac	445 bu	39 A	8.7 T	32.7 A	335 bu	8 Ac	1.3 T	13.9 Ac	
Grand Total	264.8 Ac	429.4 T	43.6 Ac	1,682 bu	38 Ac	535 bu	39 A	8.7 T	32.7 A	335 bu	8 Ac	1.3 T	26.9 Ac	

Buckwheat plantings were again a "boom and bust" operation. Twenty acres planted at the Conlon produced well, but remained too green to combine some for seed. The entire crop was rotary mowed for geese. The Chicago Farm crop was light due to wet ground and the nine acres we planted at the Walsh looked excellent until a mid-August frost got it. It appears that buckwheat remains a risky crop for the north peat farms.

The 1967 rye seeding at Walsh (9 acres) took off well after a wet spring but a hail storm June 2 flattened it. With the wet summer the crop made a remarkable recovery and produced about 25+ bu/acre. This was disced down in the fall and the heavy sprouting of this reseeding provided excellent Sandhill Crane and goose browse.

Fifteen acres of upland planted rye and nine acres in the reworked lower edge at Sub-headquarters got hit hard by geese. The Lower Goose Pen acreage will flood out with spring nesting levels in the pool. It appears, however, that annual discing and seeding to fall browse such as rye or wheat will not only prove attractive to geese but maintain the lower field open and eliminate encroachment by tag alder and willow.

Oats with new seedings were excellent on all areas except Diversion where a wet spell in planting time prevented good germination and catch. This combination remains our "hottest" crop, along with buckwheat, for all wildlife using farm fields. Wet, humid weather on the rotary mowed oats at Walsh caused oats seed to germinate under the "slashings" and created quite a reaction on hungry honkers.

After seeing geese nearly decimate a fall wheat seeding on private land last year we decided to insert some into our fall browse program. The feed company had difficulty getting us seed on time and the wet weather prevented more than a token planting at the Diversion. This 3 acres came up thin and provided little browse. Even though the 5 acres at Walsh was planted late, the thin growth was used heavily by geese. Wet weather prevented seeding of 13 acres planned for Chicago Farm. We learned a little -- 1969 will see a more coordinated effort and we'll try again.

Haying is covered in the Resource Management Section.

Several important improvements were accomplished during the year. Acquisition of the new John Deere 4020 tractor and the big disc should improve our field work and more importantly give us the "edge" we need to get the crops in at the right time.

The Diversion field drain, a new ditch running from the southeast corner of the field for about 2,630 feet to the east, connecting with Unit II Diversion Ditch, should now provide a positive outlet for high ground and surface water much needed on this peat and

muck farm. The south boundary ditch of the same farm was cleaned (1,840 feet) and connected to the southeast ditch. After evaluating the effects of this work on the water table and run-off next spring and early summer, additional lateral drains may be cleaned and deepened. Total cost of this dragline project was \$1,780 including construction of six dragline mats which will be used for many years on other projects.

An important first step in revising and updating a rather old and outmoded Farm Plan was completed in the fall when all the farm fields were measured and marked within each farm. Acreages were calculated, new field maps drawn, Field Crop Record forms developed and completed to date and a start made on drawing together historical data on each of the areas. By next fall we hope to have a workable plan in operation.

An important project relating to this will be a re-evaluation of the Coop-Refuge share cropping agreement. Present divisions may be unrealistic in that the Cooperator receives 80% of the acreages.

Soil samples were taken on the Diversion and Walsh farms and the south farms will be tested next year. Lime was spread on the 20-acre east Conlon field and on a portion of field G at Diversion. Wet ground here prevented completion this year.

Overall a good year for most crops, especially oats with new seedings and hay. Wet weather disrupted planting schedules, but crop response on the dry Walsh and north half of the Diversion made up for unplanted acres elsewhere. See section on haying for more.

C. Collections and Reciepts

1. Seed and Other Propogules. A total of 102 seedlings were sent to the Coover Arboretum in Grantham, Pennsylvania from the three Natural Areas on the refuge. Twelve seedlings of each species were sent from the following Natural Areas: Red Pine Natural Area; sugar maple, American beech, and balsam fir; Hemlock Natural Area; Eastern hemlock and red maple. Six seedlings of yellow birch were also sent from the Hemlock Natural Area. These seedlings are to be used for provenance testing.

See two copies of form NR-7 and NR-8 for complete record of all collections and receipts.

2. Specimens. The following is a list of specimens acquired during the year and their disposition.

Held in the refuge freezer as of December 31, 1968 for distribution to educational institutions.

Mammals

1 Red Fox
1 Flying Squirrel
3 Muskrats
1 Mink
1 Snowshoe Hare
1 Chipmunk
1 Black Squirrel

Egg Collection

2 Sandhill Crane
2 Canada Goose
1 Red-winged Blackbird
1 Swallow
1 Starling
1 Black Tern
1 Sparrow
1 Baldpate
1 Marsh Hawk
1 Common Merganser
1 American Bittern
1 Mallard
1 Common Loon
1 Ring-neck Duck
1 Sparrow Hawk
1 Black Duck
1 Wilson's Snipe

Birds

2 Whistling Swans
3 Canada Geese
2 Canada Geese (goslings)
1 Snowy Owl
1 Nashville Warbler
1 Myrtle Warbler
1 Robin
1 Cedar Waxwing
1 White-winged Crossbill
1 Kinglet
1 Chickadee
1 Yellow-shafted Flicker
1 Baldpate
1 Ring-necked Duck
1 Sora Rail
2 Pine Grosbeak
1 Broadwing Hawk
1 Yellow Warbler
1 Downy Woodpecker
1 Great Horned Owl
2 Herring Gulls
3 Ruffed Grouse

Specimens Disposed Of

1 Bobcat -- University of Michigan
2 Bald Eagles -- Patuxent Wildlife Research Center

D. Control of Vegetation

No island brushing was done this year. Dike and trail brushing continues on J-I dike, about half of the east end B-1 dike, Marsh Creek Road to Riverside dike, A-2 dike and several other areas were worked on.

E. Planned Burning

None this period.

It was hoped to begin a controlled burning program with the Michigan

Department of Natural Resources for Sharp-tailed Grouse habitat improvement on refuge land and adjacent State land but untimely rains made burning impossible.

F. Fires

1. Statistical Fires. None this period.
2. Protection. The Fire Protection Plan was updated including a revision of the duty roster.

The monthly SAFETY meeting for April was used to discuss the coming fire season, the duties and responsibilities of Refuge Personnel concerning wildfires on refuge lands, and to familiarize refuge personnel with the location and operation of fire fighting equipment.

3. Fire Weather. Fire danger was low to moderate except for a dry period in early spring before vegetation greened up. The refuge was fortunate that no wildfires occurred during this period of high fire danger as the State of Michigan had a lot of destructive fires during early spring.

The Fire Danger records were maintained from April 11 to November 8 and portray the following:

<u>Fire Danger</u>	<u>Days</u>	<u>Spread Index</u>
Low	155	0 - 4
Moderate	28	5 - 9
High	27	10 - 19
Very High	11	20 - 39
Extreme	0	40 - 100

IV. RESOURCE MANAGEMENT

A. Grazing

None at present but we are considering a few areas near Walsh Ditch and north of the deer wire and the Show Pools.

B. Haying

Table 12 compares the yields for the past two years. Even with the abundant moisture throughout the summer hay yields were not as great as we anticipated. However, the hardwood soil farms averaged 2.1 ton per acre this year compared to 1.6 ton per acre in 1967. Also, last year the Walsh Farm produced only 7 ton off 20 acres for an average of .35 ton per acre while this year 27 acres produced 20 ton for .74 ton per acre. There was little doubt the wet summer helped all the crops on this farm.

Table 12. 1968 - 1967 Hay Yields Compared

		<u>Acres</u>	<u>Tons</u>	<u>Tons/Acre</u>	<u>Bales</u>
H.W.	1968	153	322	2.10	11,980
Peat	1968	112	107	0.96	4,324
	Totals	265	429	1.60 T./Ac. Avg.	16,304
H.W.	1967	142	264	1.60	10,577
Peat	1967	80	91	1.12	4,555
	Totals	222	355	1.60 T./Ac. Avg.	15,132

H.W. = Hardwood soils (Conlon, Sub-hdqs., Smith, and Chicago Farms)

Peat = Peat/muck soils (Diversion and Walsh Farms)

Of the 4,324 bales from Diversion and Walsh we received 2,100 as our share. This was used to mulch the following areas: 1,400 to A-2, 400 to Pine Creek Road, 100 to C-3, 200 to Sub-headquarters stock pile. We were to get 6 acres from Chicago Farm but some ended up too wet for the cooperator and we ended up getting about 1,000 bales off approximately 13 acres. This was distributed with 150 to T-2 and 850 to Riverside dike (west from Marsh Creek).

In contrast to last year when a late, dry summer prevented good regrowth of hay stubble for browse, the regrowth this past summer and early fall was excellent. All of the hay fields provided a lot of food.

Several fields on the peat farms were top-dressed with 200 pounds of 6-24-24 per acre during late August. These were fields B (15 acres) and C (15 acres) on Diversion and the south 7 acres of field B and 15 acre field D of the Walsh. We are hopeful that this application will increase the vigor of the seedings thereby reducing competition from weeds and, more importantly, to help the hay bounce back after cutting.

C. Fur Harvest

In an attempt to eliminate nuisance beaver damming the Diversion and Holland Ditches a control program was initiated during the State season March 30 through April 17.

Trapper interest was very low when we advertised the program on a 50-50 share basis. Interest picked up, however, when we changed this to a \$10.00 fee for each permit with trapper take all (6 beaver allowed under State regulations). Using the new permittee selection procedure, 17 applications were received. After screening, ten were acceptable and from these we drew six trappers. Areas were also assigned by drawing.

The six trappers reported taking the following:

Holland Ditch	6
Diversion Ditches	0
J-G Pool Ditch	3
Grey's Creek Flooding	5
Pine Creek (west of D-1)	5
Driggs River (Diversion to M-28)	<u>10</u>

Total 29

Initially we allowed three trappers in the Diversion Ditches. The beaver apparently moved due to a lowered fall water level. Two trappers were reassigned the Driggs River area and took 10. The other trapper was reassigned Grey's Creek flooding, where beaver kept blocking a road culvert, and took 5.

Plans for 1969 include some removals from west A-2 and C-2 Pool areas where they are flooding out the Driggs River Road in spots; and along the Riverside dike spur pools where they have blocked overflow around the west edges of the spurs creating high water which could create wash outs in the Riverside or spur dikes.

Cameron Coe of Manistique was retained as the predator trapper.

His record appears on page 15 of this report. In addition Mr. Coe took 20 mink and 18 rats of which the refuge received half. The refuge share was sold to Warshawsky Bros., Manistique; mink for \$6.00 male (4) and \$3.00 female (4). Nine rats brought \$4.00. The mink sale was a bit premature as the next day Perry Bros. of AuTrain offered \$10.00 and \$5.00. Next year we know.

D. Timber Removal

No timber was removed from the refuge this period. In April, 390 cords of Jack Pine were put up for bid near the Driggs River Picnic Area, NE $\frac{1}{4}$, Section 36, T44N, R15W. At a meeting with six interested jobbers it was decided to postpone selling the stumpage until the fall. The jobbers had already filled their pulpwood contracts for 1968 so they had no outlet for any new wood and their buyers had advised them they did not want any old wood for 1969.

The "Driggs River Sale" was put up for bid again on October 4, 1968 and three jobbers bid on the stumpage. Mr. Robert Fox of Germfask was the highest bidder with a bid of \$6.15 per cord. Mr. Fox will begin cutting in January 1969.

With the completion of the forest inventory and the writing of the Forest Land Use Plan this past fall it is expected that the refuge will begin a major timber sales program in 1969.

E. Commercial Fishing

None.

F. Other Uses

Mr. Stanley Tyner of Shingleton did not apply for a permit to load forest products at the Walsh railroad siding. However, there was activity at the siding. Mr. Tyner was contacted by mail, but to date we have received no report.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Waterfowl Disease Study (Leucocytozoon)

Dr. James Barrow of Hiram College, Ohio, completed five years of data gathering in September of 1963. To date no publication or completion report has been received.

B. Blackfly Study

The blood disease, Leucocytozoon, was expected to flare up again this year due to its apparent four-year cycle. Because of an early goose hatch (10-14 days earlier than normal) and a relatively low black fly population, it appeared for a time that the expected die-off would not occur.

On June 4, however, several lone goslings were observed. They seemed healthy but were separated from the broods. Some of these loners were captured and examinations revealed that they had severe infections and they died soon afterward. By June 7 it was obvious that a die-off was occurring and attempts were made to capture lone goslings and recover dead ones for examination.

A total of nine live goslings were recovered and all but three died. These three probably would have died in the wild. Twelve dead goslings were recovered, nine of which were in good enough condition to be examined. During the severe die-off of 1964 when 500 goslings died, 13 were recovered and only five were in good enough condition to be examined.

Average brood size dropped from 4.5 on June 6 to 3.7 on June 10 and to a low of 2.6 on June 24. After accounting for breeding pairs that lost entire broods we estimate a 70-75% loss with only 300 goslings of the 1968 hatch surviving.

Following is Dr. Tarshis' report on field studies conducted at Seney in the spring of 1968. Dr. Tarshis is from the Patuxent Wildlife Research Center, Laurel, Maryland.

REPORT -- FIELD STUDIES
BLACK FLIES AND LEUCOCYTOZOON
SENEY NATIONAL WILDLIFE REFUGE, MICHIGAN

Canada Goose Die-Off, 1968

Of 1,022 goslings that hatched this spring, 75% were lost, presumably from Leucocytozoon infection. Between May 26 and June 11, 155 goslings were examined and found to have Leucocytozoon. Examinations were made by blood smear. Twenty-eight yearling and adult geese were found to be infected with either Plasmodium and/or Leucocytozoon. The

table below presents the results of these examinations:

Adult and yearling birds

- 21 Infected with Plasmodium
- 5 Infected with Leucocytozoon
- 2 Infected with Leucocytozoon and Plasmodium
- 3 No parasites found

Goslings

- 127 trapped goslings were infected with Leucocytozoon
- 8 goslings became infected with Leucocytozoon in our experimental cages
- 12 goslings were found dead -- 9 still in good enough condition to take blood smears from were found infected with Leucocytozoon. Tissues were saved for sectioning.
- 7 goslings were found ill and died of Leucocytozoon, smears were made from blood and tissues saved for sectioning.
- 5 goslings were found ill and recovered after being placed in quarantine -- had Leucocytozoon.

Since other workers had incriminated Simulium rugglesi as a vector of Leucocytozoon, and we had not determined the vector at Seney, we were particularly interested in collecting as much data as possible on this species this year. One S. rugglesi was recovered from an exposed crow on May 15 in a field adjacent to the East Branch of the Fox River, west of M-77 and north of Seney. This species was not found again until May 23 when small numbers were taken from exposed mallard and black ducks at three widely separated sites -- East Branch of the Fox River west of M-77, the Fox River at the Railroad Bridge south of M-450, and the Cookson Bridge site northwest of M-436. The first blood smears in which Leucocytozoon was found were taken from goslings trapped on May 26. These birds showed no symptomatology of the disease. If, as is generally believed, development of Leucocytozoon in black flies takes five days and parasite development in birds takes 10 days, the flies would have had to be present on the refuge around the 11th of May, even though we did not pick any up until the 15th of May.

The first dead gosling was found on the 5th of June and it was between 7 and 10 days of age. The first gosling showing symptomatology of the infection was found on the 7th of June and it was 7 to 14 days of age. This bird died 2 days later. The greatest number of sick and dead birds examined and found to be infected with Leucocytozoon this spring were goslings between 7 and 45 days of age.

Owing to an over abundance of rain, it has not been possible to collect adult files as often as we would have like to. However,

we were able to collect S. rugglesi from exposed infected goslings when it did not rain. We obtained 10,345 flies, of which 9,165 (88.4%) were engorged with blood.

Experimental Bird Exposures

In 1966 and 1967, Canada goslings obtained from the New York and Missouri Conservation Departments were exposed discontinuously at several sites on the Seney Refuge in hopes that they would become infected with Leucocytozoon by the bite of two early appearing ornithophilic black flies (Cnephia invenusta and C. taeniatifrons). These two species have always been the earliest occurring ornithophilic simuliids and have always been found at the time the goslings were hatching. Because of this we felt they were likely vectors of Leucocytozoon and we wanted to prove or refute this idea. Though the birds were exposed for a total of approximately 60+ hours each year, one to seven and one-half hours a day over a 17 day period, none of the birds became infected. Since it was not certain that the birds were getting the best exposure to the flies in this way, a new type of holding cage was designed and three were constructed in 1968 to hold birds for continuous exposure. In one cage were placed a gander, a goose and 5 goslings and in each of the other two cages were placed a goose, a gander and four goslings. The goslings were 2-3 days of age when placed in the cages. At one site (Lower Goose Pen) the birds were first placed into the cage on May 13, at the second site (D-1 Pool) the birds were placed in the cage on May 15 and at the third site (T-2 Pool) the birds were introduced on May 16.

The first infected goslings were found at the T-2 Pool site, 14 days after they were exposed. At the Lower Goose Pen site three of the four goslings became infected with Leucocytozoon 19 days after they were exposed and at the D-1 Pool site one of the five goslings became infected 37 days following their exposure. Leucocytozoon infected mallards were exposed at each goose cage site and engorged Cnephia and S. rugglesi were picked up from the mallards. After a four day parasite developmental period within the flies a number of flies from each genus were macerated in physiological saline and inoculated intraperitoneally into clean mallards. None of the birds inoculated with fed Cnephia showed infections with Leucocytozoon, but two of the mallards inoculated with fed S. rugglesi became infected with Leucocytozoon. One bird showed the infection in 10 days and the other bird in 11 days. From these preliminary experiments it appears that C. invenusta and C. taeniatifrons are not vectors of Leucocytozoon but that S. rugglesi is at the Seney Refuge.

Collection of Simulium rugglesi

In the years 1964 through 1967, only a few specimens of larvae and pupae of S. rugglesi were collected from a number of breeding sites on the Seney Refuge and in surrounding areas. The largest number of

larvae and pupae taken were collected in 1967 on burreed in 6 to 8 inches of water on the shore of the Fox River, 6 miles east of the refuge off of M-450. However, this finding was made one day before leaving for Patuxent and so further investigation had to be postponed until 1968. Of more than 3,000 egg samples taken in the years 1964 to 1967, none of the emerging larvae were those of S. rugglesi. However, on May 29, 1968, a stretch of water 30 feet wide and 1.75 miles long located in Unit II of the Seney Refuge referred to as the Diversion Ditch, was found to be extremely rich with larvae and pupae of S. rugglesi. The immature stages were found in water from 2 to 15 inches in depth and the water flow was 0.8 ft./sec. The larvae were found on several species of pond weed, water milfoil, various grasses (as yet unidentified), sticks, stones and tree branches. Larvae brought in from the field and placed into culture developed into pupae 10-12 days after placement in the rearing aquariums and adults emerged from the pupae several days later. This is the first time that anyone has reared S. rugglesi from larvae to adult flies. Subsequent collections of larvae and pupae from the Diversion Ditch site have yielded hundreds of adult flies. The Diversion Ditch is the largest breeding site for S. rugglesi yet found on the refuge. No other black fly species were found breeding in this area.

Black fly eggs believed to be those of S. rugglesi were found on several species of pond weed along the bank of the ditch and in water 6 inches deep. Large numbers of these eggs were collected and some were placed into culture and larvae emerged two days later, but the larvae are still too small to identify. The remaining eggs are being held at 4° C until they can be transported to Patuxent and placed in culture.

Feeding Simulium rugglesi on infected goslings

More than 500 laboratory reared S. rugglesi have been fed on Leucocytozoon infected goslings. The flies are aged for 2-5 days after emergence from the pupae and before feeding. During this aging period the flies are held in gauze-topped, quart-size ice cream cartons. Pieces of apple are placed in the holding boxes for the flies to feed on and the chamber is kept moist by placing a wad of damp cotton on top of the gauze lid. Prior to feeding the flies, the feathers or heavy down are clipped away from the bird's abdomen. Some down should be left for the flies like to burrow through the down to the skin. A plastic feeding chamber 2 1/4 inches in diameter and 2-3/4 inches high is used to hold the flies while they are feeding on the bird. The feeding chamber is open on the bottom, but the top of the chamber has a cover fitted with a slitted rubber insert through which the flies are introduced and removed. The chamber has a flange glued around the outside about 3/8 inch up from the bottom. The chamber is placed over the plucked feather and down area and fastened to the bird by putting tape along the flange and around the bird's body. The bird also is taped to a holding board. Generally the longer aged flies become engorged

faster than those aged less. Both male and female flies are placed into the feeding chamber for we do not want to take the time to separate the sexes. We have found that the presence of males does not deter the females from feeding, as is the case when male mosquitoes are not separated prior to feeding. This is the first time that laboratory reared S. rugglesi have been successfully fed on birds. It is believed that the currently used technique can be used for a number of ornithophilic and mammalophilic simuliid species. We have already used it to feed laboratory reared and wild collected C. invenusta and C. taeniatifrons, as well as S. rugglesi. Our laboratory fed S. rugglesi will be inoculated into susceptible birds.

New Records of Black Flies

In our studies on the occurrence of Simuliidae on or around the Seney Refuge, prior to April 1968, we had found 42 species occurring in this area. Since April, during our search for breeding sites of various species of black flies, we have uncovered four new species that have never been reported from Upper Michigan before. These include: Simulium coroxtoni, S. latipes, S. quebecense and S. pugetense. Additionally, we have found the larvae of C. invenusta and C. taeniatifrons. Only one larva of C. taeniatifrons is known to exist in the United States and this is in Urbana, Illinois. This spring we found at least 75 larvae of this species. This species also occurs in Wisconsin. Cnephia invenusta has been taken in New York and Canada, but never found before in Michigan.

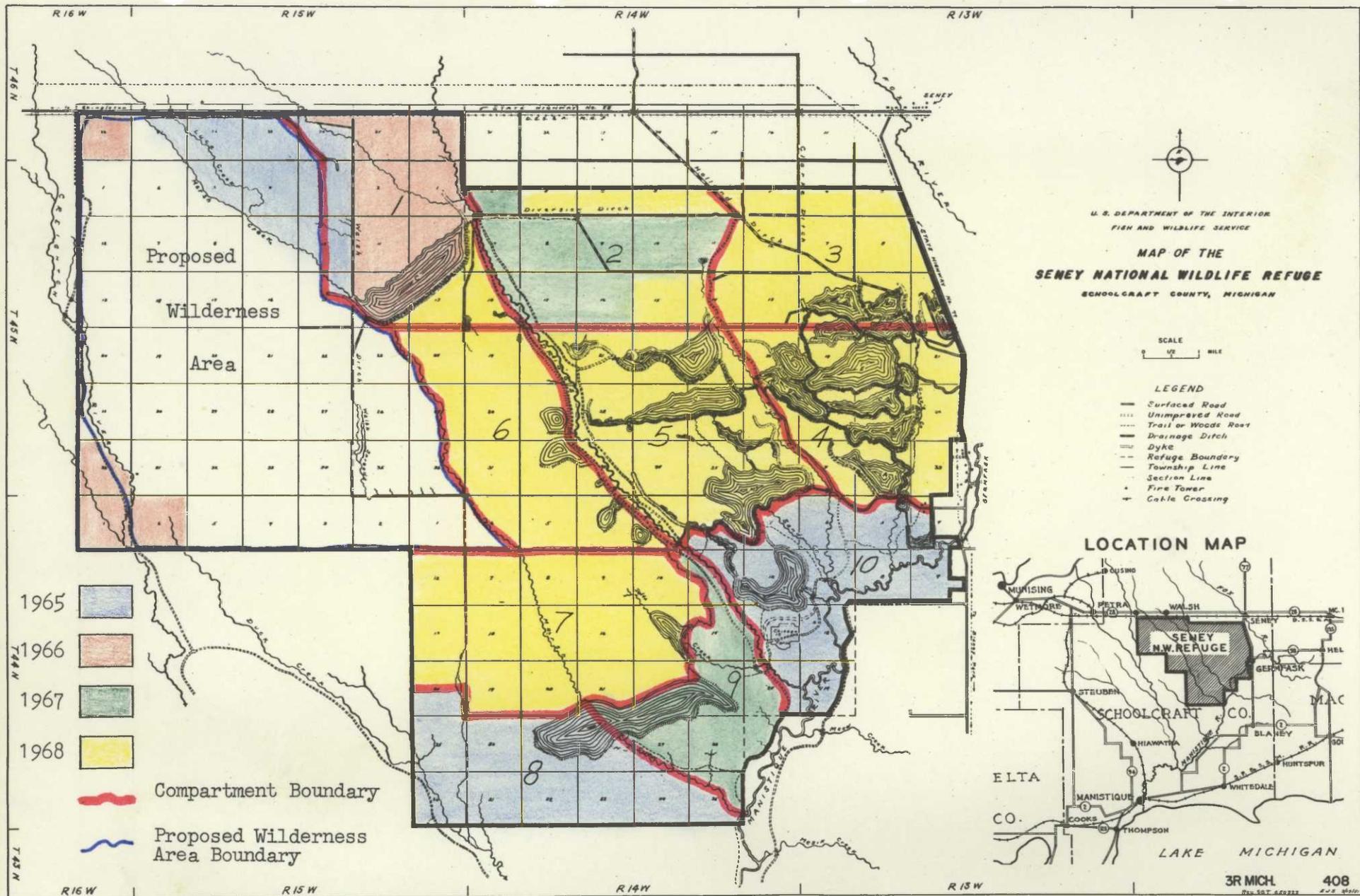
C. Land Use Planning

In 1965 an intensive inventory of Seney's forest types was initiated. Seventy-three thousand, nine (73,009) acres have been inventoried to date. The major part of the proposed wilderness area is the only portion of the refuge that remains to be inventoried. Five thousand, fifty-six (5,056) acres of the proposed wilderness area have been inventoried. This past year, forty-two thousand, six-hundred forty (42,640) acres were inventoried and an initial prescription placed on a Forest Land Use Plan (FLUP) cards. Approximately half of the acres inventoried this year were done from the Bureau aircraft using aerial photos. Spot checks were made on the ground where type mapping was difficult from the air or where the value of the timber warranted an intensive ground check.

All of the data obtained during the inventory has been compiled and the first draft of the Forest Management Plan has been written.

D. Pesticide Study

On April 12, 1966 Richard L. Moore and Carl E. Carlson from the U.S. Department of Agriculture, Division of Plant Pest Control, Lansing,



Michigan established permanent study plots in the Red Pine Natural Area, Section 11, T44N, R14W, for the purpose of pesticide study and surveillance. Fifty soil core samples were to be taken annually from each of ten one-acre plots and analyzed for pesticide accumulation and retention and checked against studies made in areas from known contamination. Since the initial establishment of these plots, no further work has been attempted on this study at Seney.

E. Trapping and Banding

For the third straight year Seney Refuge personnel carried out a successful waterfowl banding program. Prior to 1966, no more than 950 ducks were banded in a single year, however, during the years 1966-68 a total of 5,400 ducks and 900 Canada geese were banded. Results of the Dewline Duck, Woodduck and Canada Goose banding programs are shown in Table 13.

Table 13. 1968 Banding

Species	Adult Female	Adult Male	Imm. Female	Imm. Male	Local Female	Local Male	Unk.	Totals
Mallard	65	39	244	285	1	2	4	640
Black Duck	36	50	162	270	0	0	2	520
Pintail	0	1	0	0	0	0	0	1
G.winged Teal	0	3	2	2	0	0	0	7
B.winged Teal	4	1	22	20	1	0	0	48
Woodduck	15	114	16	30	0	0	0	175
R.necked Duck	7	0	5	4	9	12	0	37
Canada Goose	12	16	37	38	44	37	15	199
Totals	139	224	448	649	55	51	21	1,627

Goose Trapping and Banding

Banding efforts in 1968 resulted in the capture of 413 Canada geese. Of the total, 199 were new captures, three were killed and the remaining 211 already carried bands. Among the retrapped birds, the oldest band was on an adult male that had been banded at Seney on July 6, 1960. Table 14 shows the results of goose trapping efforts since 1956.

 Table 14. Seney Canada Goose Banding and Kill Data, 1956 - 1968

Year	Number Banded	Number Retraps	Total Trapped	Direct Returns	% Direct Returns
1956	79	1	80	15	18.9
1957	142	6	48	10	23.8
1958	186	19	205	20	10.7
1959	230	46	276	16	6.9
1960	160	227	387	6	3.7
1961	119	64	183	7	5.8
1962	345	86	431	19	5.5
1963	219	155	374	15	6.8
1964	316	225	541	15	4.7
1965	168	107	275	30	17.8
1966 *	343	227	570	26	7.5
1967 *	368	216	584	**	**
1968 *	199	214	413	**	**

* Goose hunting season closed locally.

** These data will be worked up later.

Quotas and 1968 Results

Table 15 is a summary of all waterfowl captured during 1968. Quotas established for Seney were: Mallards 500; Blacks unlimited; Woodducks 300+ and up to 200 locals if possible; and Blue-winged Teal 500.

We did well on Mallards and Blacks, but Woodducks and Blue-winged teal numbers were off. We banded more Woodducks (175) this year than last (119), but its rough to find locals. The big surprise was in Blue-winged Teal as we dropped from 693 in 1967 to a

disappointing 48 this year. Peak numbers were down during the fall migration this year, but not enough, we believe, to have affected our trapping.

Table 15. Summary of Waterfowl Captured At Seney - 1968

Waterfowl Captured	Banded	Retrap	Recapture	Mortality	Totals
Mallard	640	18	560	21	1,239
Black Duck	520	18	433	21	992
Pintail	1	0	0	0	1
Green-winged Teal	7	0	3	0	10
Blue-winged Teal	48	0	52	4	104
Woodduck	175	39	188	10	412
Ring-necked Duck	37	6	29	5	77
Canada Goose	199	95	116	3	413
Totals	1,627	176	1,381	64	3,248

Cost and Summary

Table 16 compares duck banding results, effort and cost for the last three years. A more complete report on the entire program is submitted annually to the Regional Office in November and is on file.

Table 16. Comparison of Duck Banding Results at Seney, 1966-1968

Item	1966	1967	1968
Ducks Banded	2,020	1,930	1,428
Predation Loss	55 (2.7%)	65 (3.4%)	57 (4.0%)
Drowning Loss	14 (0.7%)	8 (0.4%)	4 (0.3%)
Traps in Use	21	15	14
No. of Trapping Days	70	58	60
Man-Hours Expended	490	450	480
Ducks Banded/Man-Hr.	4.1	4.3	3.0
Ducks/Trap/Day	1.37	2.21	1.70
Approx. Total Cost	\$1,900.00	\$1,500.00	\$1,900.00
Cost/Banded Duck	\$.94	\$.78	\$ 1.33

An active animal control program (raccoon and mink) has kept duck predation at a low level. Predation loss in 1968 was 57 ducks (4% of the total banded), most of them lost to mink.

Canada geese are a constant problem around duck trapping sites. A mesh screen around the trap entrances and drive trap nets around a trap site are helpful, but more needs to be done to discourage geese from completely dominating a site.

The three Colorado traps were used only briefly this year with little success. The permanent cannon-net site (E-1 Pool) was used little, but proved successful for ducks.

Canada goose banding was most successful on family groups in the headquarters area. Only three drive trapping operations were held in July as large concentrations of geese could not be located.

A Waterfowl Trapping Techniques Plan was recently developed for Seney to aid in the continuation of a successful program. This plan includes techniques which proved successful in the past, maps illustrating good trapping sites and recommendations for better results.

F. Summer Student Biological Projects

Biological Project 1-68, Student John E. Sarvis

Ring-necked Duck Status

The Ring-necked Duck appears to be one of the most abundant of the nesting ducks on the refuge. During the summers of 1966 and 1967 Student Early of Ohio State University conducted some studies concerning breeding biology and band analysis. These initial investigations contributed some basic knowledge of this bird, however, their main shortcoming was the fact that the studies did not commence until mid-June of each summer. No information relative to courtship, pairing and pairs utilizing the refuge was obtained.

This year a student arrived in April and was assigned this biological project. Following is an abstract prepared by Student Sarvis. A completed final report is in the files. During the brood season we noted that survival or production of Ringnecks appeared lower than normal. Blood slides were taken from 39 Ringnecks during trapping operations and checked by Patuxent. The letter from Dr. Herman, following the abstract, is self-explanatory and may explain what happened to duckling survival. Interestingly, of course, is the fact that 1968 will long be remembered as a disastrous year for the gosling die-off due to Leucocytozoon

PRELIMINARY SURVEY OF THE STATUS OF THE RING-NECKED DUCK
(Aythya collaris) ON SENEY NATIONAL WILDLIFE REFUGE

ABSTRACT

Although the ring-necked duck (Aythya collaris) is the most numerous breeding duck at Seney National Wildlife Refuge, very little is known about the biology of the ringneck at Seney. More information on the ringneck is needed to evaluate the effects on this duck of current goose management practices and to determine a management program for the ringneck at Seney.

From April 29 to August 20, 1968 a preliminary study of the ringneck was made by wildlife aid, John E. Sarvis. This four-part study consisted of pair counts, nest searching, brood counts, and banding. Although investigations were made throughout the entire refuge, the main, intensive studies were made in the Study Area (F-1, E-1, and C-1 pools in Unit I).

A refuge breeding population of 100 to 150 pairs was determined from spring pair counts. The Study Area contained 28 pairs.

Fifteen ringneck nests were found during the nest searching phase. The following data were recorded for each nest: date found, clutch size, egg measurements, amount of down, vegetative type, nest materials, distance to nearest open water, depth of the nearest open water, dimensions of the nearest open water, distance to the nearest dike, nest fate, and other observations which seemed pertinent. Down, breast feathers, and shell samples were also collected. Of the 15 nests found, 10 hatched, two were destroyed by avian predation, one was destroyed by mammalian predation, and two were abandoned. Hatching success was 67% and the predation rate was 20%.

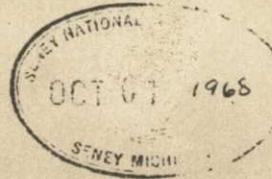
The refuge brood population was at least 50 broods (14 on the Study Area) and average brood size for the refuge was 4.4 (4.0 on the Study Area). This was a considerable decrease both in number of broods and in brood size from previous years. Although the reasons for this sharp decrease are unknown at the present, Leucocytozoon disease and bad weather at the time of hatching may have caused a die-off.

Twelve local male ringnecks, nine local females, four immature males, five immature females and eight adult females were banded this year. Six ringnecks banded in 1967 were retrapped this year. Trapping was most successful using the Ohio type trap baited with corn. E-1 and M-2 pools were most productive.

Important and beneficial information of the ringneck at Seney could certainly be obtained by a continuation of this study (and additional studies) in the future.

UNITED STATES GOVERNMENT

Memorandum



MANAGER		W
JR. MANAGER	✓	DJE
MGR. BIOLOGIST	✓	CMH
FORESTER	✓	BH
CLERK		
MECHANIC		
MAINT. MAN		

TO : Refuge Manager, Seney National Wildlife Refuge
Star Route
Seney, Michigan 49883

DATE: Sept. 27, 1968

FROM : Chief, Section of Wildlife Disease & Parasite Studies
Patuxent Wildlife Research Center
Laurel, Maryland 20810

SUBJECT: Blood Smears of Ringnecked Ducks

Copy placed in 5
RN Study reports after
page 16 (10/2/67w)

This is a report of our analysis of the blood smears from 39 ringnecked ducks taken at Seney NWR during August, 1968, which you gave to Dr. Tarshis for our study. Fourteen of these birds had light infections of Leucocytozoon. At this time of year, from our experience with Canada geese and other waterfowl, it is typical to find only low grade infections, which represents carriers or birds that recovered from the infection earlier in the year. We can assume that many more of the birds had been infected than this superficial survey would indicate. It makes one suspicious that if there were extensive losses of ring-necked ducklings at Seney the cause could have been Leucocytozoon, as was the case in the Canadas. Blood smears from the ducklings when a few weeks old would have further confirmed this hypothesis, but it appears very likely they would have shown heavy infections.

In addition to the Leucocytozoon we found Haemoproteus in five of the birds. This is another type of malaria, transmitted by Culicoides (no-see-ums). Most of these were fairly heavy infections. We do not yet know what effect this has on survival in infected ducks. It occurs about a month to six weeks after the Leucocytozoon in the birds. We have, in the past, seen it in the Canada geese at Seney and elsewhere as well as in a variety of duck species.

The following is a tabulation of the positive findings:

- 725-44862 Haemoproteus and Leucocytozoon
- 44856 Leucocytozoon
- 44860 Haemoproteus
- 44877 Leucocytozoon
- 44873 Leucocytozoon
- 44874 Leucocytozoon
- 44875 Leucocytozoon
- 44868 Leucocytozoon
- 44865 Haemoproteus and Leucocytozoon
- 44866 Leucocytozoon
- 726-44853 Leucocytozoon
- 44887 Leucocytozoon
- 44786 Haemoproteus and Leucocytozoon
- 44727 Haemoproteus and Leucocytozoon

Carlton M. Herman

Carlton M. Herman



Biological Project 2-68 Student Ronald J. Field

WOODCOCK STATUS (and Jacksnipe Trapping)

From information gathered over the past years on the Woodcock singing route survey and general observations it appears that Seney has a good size breeding population (see Table 4, page 10). However, little is known of the bird's habits and habitat use on the refuge. This project is a preliminary survey of the Woodcocks' status here in an effort to learn more of this birds requirements.

The Student's main approach was an attempt to locate concentrations of birds by observing what appeared to be desirable open field feeding areas. Once located an effort to trap and band as many birds as possible would be made. No feeding areas were located, and no birds were banded. Widespread and above normal precipitation may have been responsible for this.

The student kept an accurate record of all observation attempts and actual sightings of Woodcock by him and other employees. This report covers in detail techniques, areas observed and other details and is in the files.

If the study was unsuccessful in one way, it was successful in documenting preliminary survey information and techniques which will be of aid to future students assigned this project.

Along with this project the student attempted to mist-net Jacksnipe in drawn-down A-2 Pool. Last year 39 were netted and banded at headquarters. Only four were captured this year. Field's conclusion was that the migrational build ups are so unpredictable it made trap-driving and timing difficult. It should be noted that large flights of snipe used partially drawn-down H-1 Pool the last part of August, but no mist netting was attempted here as duck trapping was being conducted on this same pool area.

Biological Project 3-68 Student Louis Verner

DUCK NESTING BOX CHECK

A check of 138 duck nesting boxes distributed on the refuge was carried out for the third consecutive year. Thirty-eight of these boxes were installed in 1963 and the remaining 100 were placed in groups of five in the spring of 1966. Table 16 summarizes the results of the nesting box checks for the three year period.

In each case a number of the boxes could not be located. Percentages of use are calculated on the basis of the number of boxes actually checked. It is interesting to note that use by the species for which the boxes were originally intended (the Woodduck) is insignificant.

Table 16. Summary of Nest Box Survey Results at Seney, 1966 - 1968

Species	1966		1967		1968	
	No.	%	No.	%	No.	%
Woodduck	3	2.4	2	1.5	0	0.0
Hooded Merganser	21	16.8	34	25.4	43	36.5
Common Merganser	2	1.6	4	3.0	2	1.7
Goldeneye	0	0.0	1	0.8	0	0.0
Starling	27	21.6	24	17.9	24	20.3
Flicker	6	4.8	3	2.2	4	3.4
Squirrel	9	7.2	20	14.9	3	2.5
Sparrow Hawk	0	0.0	0	0.0	1	0.9
Unknown	24	19.2	14	10.4	2	1.7
Not Used	33	26.4	32	23.9	39	33.0
Total Number of Boxes Checked	125	100.0	134	100.0	118	100.0

Woodduck use, always little, declined from 2.4% in 1966 to none in 1968. At this same time Hooded Mergansers use continues upward each year. From 16.8% in 1966 to 25.4% in 1967 and to 36.5% this past year.

Starling use remains constant and in almost all cases these houses are located on short posts over emergent marshes rather than on trees as the successful boxes. Future student jobs on this project will be to change the location of these.

Biological Project 4-68

Student Conrad A. Fjetland

AQUATIC VEGETATION RESPONSES TO WATER MANAGEMENT PRACTICES

This project data will be utilized to fulfill Fjetland's M.S. Degree requirements at Michigan State University. Besides collecting transect data on aquatic plants for all pools and waterfowl use this past year, Fjetland hopes to analyze the mass of accumulated transect, census and pool history information now gathering dust in the files.

It may be possible from this analysis to determine vegetative and waterfowl response to various management practices and to establish firmer guidelines regarding future manipulations. An abstract of the paper will be included in next year's Narrative Report and copies of the thesis will be in the files.

JAP MILLET SEEDING EXPERIMENT

In addition to project 4-68, Fjetland seeded 200 pounds of millet to mud flats. Most extensive planting was 5 acres in A-2 Pool. The seed germinated well providing graze for geese, but the frost got the plant just prior to setting seed. A complete report is in the files.

VI. PUBLIC RELATIONS

A. Recreational Uses

Visitor use increased significantly over last year. All indices point to 1968 as being the best year for tourism and business in the local area for some time. The Michigan State Highway Commission's records for the first six months of 1968 showed increased in traffic (over 1967) of 18.5 percent on US-2 and 10.2 percent on the Mackinac Bridge.

Despite a relatively cool summer and an extremely wet June, tourist business in the area was up about 10 percent according to an estimate from Carl Graves, Secretary-Manager of the Top-O'-Lake Michigan Chamber of Commerce. Much of the increase might be attributed to the boom in Coho salmon fishing at Thompson Creek near Manistique.

This general, over-all increase in tourism plus an expanded public relations effort on the part of the refuge staff have both contributed to the increased use of refuge facilities by the general public.

Sales of permits under the Land and Water Conservation Fund Act continued for the third consecutive year. Permits are required only for the self-guided and guided auto tours. Table 17 presents a three-year comparison of this program.

Table 17. Number of Land and Water Conservation Fund Permits Sold -- Revenue and Administrative Expenses.

Year	\$7.00 Golden Eagle	\$1.00 Daily	\$0.50 Individual	Total Revenue	Administrative Expenses
1966	38	1,451	20	\$1,727.00	-----
1967	30	1,390	9	\$1,604.50	\$1,912.39
1968	37	1,683	12	\$1,948.00	\$1,859.50

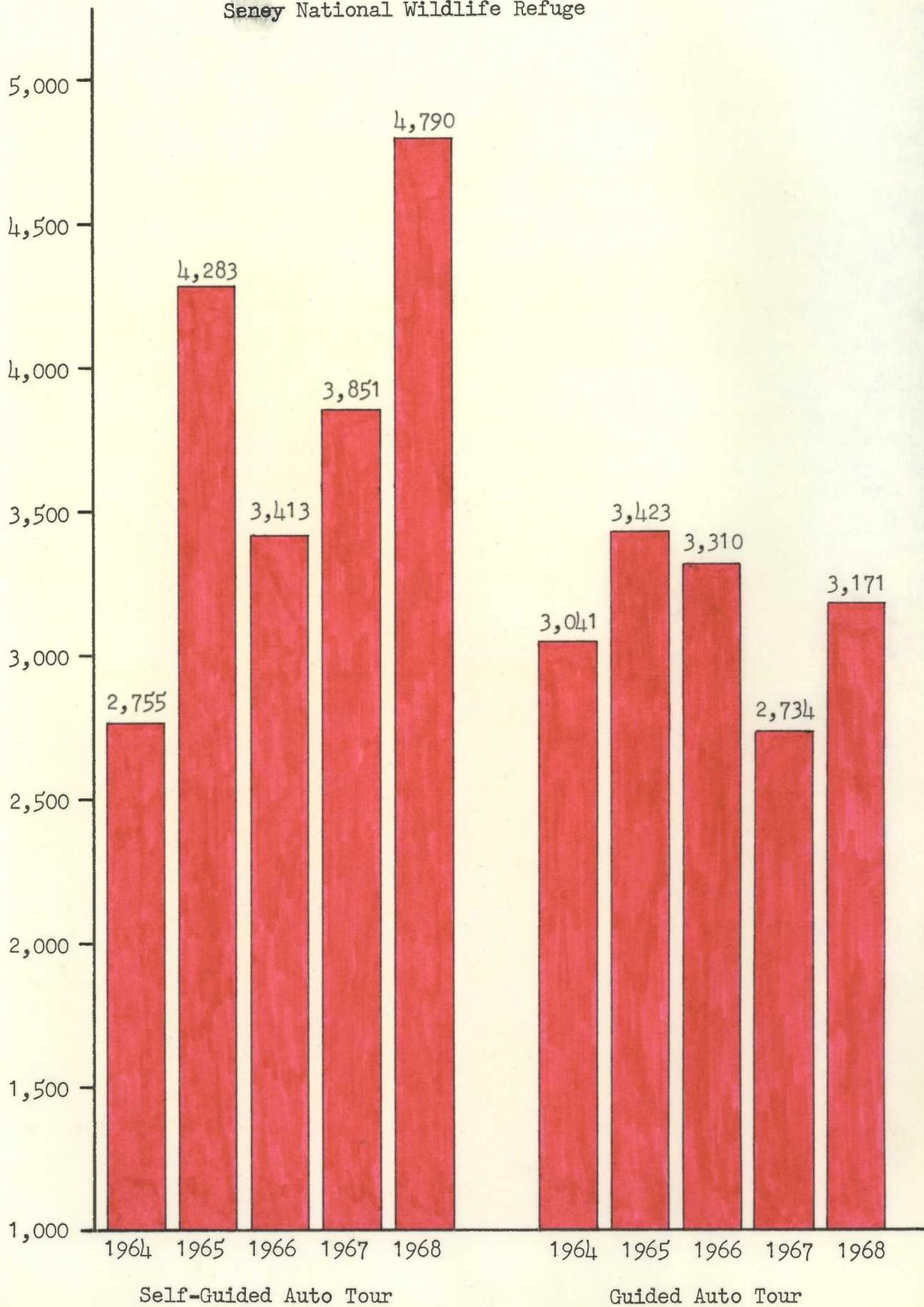
The auto tours remain popular with the self-guided tour reaching an all-time high of 4,790 visitors. Guided tour users increased markedly over last year but lagged behind the totals for both 1965 and 1966 (Figure 1).

In an effort to improve the quality of our guided tours, an experimental radio communications system was tried on the last six tours

Comparison of Visitor Numbers on Auto Tours

1964 - 1968

Seney National Wildlife Refuge



of this season. It consisted of a portable transmitter in the tour guide vehicle and individual receiving units in each car of the caravan. The system was enthusiastically received by the public and highly praised by the guides who used it. Typical of some of the comments made; "I can't imagine how you had these tours without the radios!" Plans are underway to obtain additional "Listen-In" receivers and a permanent transmitter for the guide vehicle.

Table 18. Comparison of Tours at Senev Refuge

Year	Self-Guided		Evening Guided		Total People
	Cars	People	Cars	People	
1968	1,205	4,790	734	3,171	7,961
1967	965	3,851	638	2,734	6,585
1966	963	3,413	795	3,310	6,723
1965	1,083	4,283	784	3,423	7,706
1964	621	2,755	683	3,041	5,796
1963	?	955 *	?	3,675	4,630
1962			?	4,370	4,370
1961			?	3,203	3,203

* Run one month only

Picnic area use continues to increase with an estimated 24,000 visits compared to 17,600 in 1967.

Fishing use also increased with an estimated 7,150 visits compared to 5,409 in 1967. Summer fishing is fair when the pools are first opened but seems to fall off sharply toward the end of July and does not present a steady attraction to anglers.

Hunting opportunities were increased this year with a portion of the refuge being opened to upland game hunting for the first time since 1946. However, hunting pressure was light with an estimated 780 small game hunters on the refuge from opening day in September until the end of December. This might be attributed to a lack of knowledge that the refuge was open despite the fact that it was given wide publicity. A news release was published, it was mentioned on three radio programs and refuge hunting regulations and maps were distributed to approximately 30 local sporting goods stores, post offices and other businesses. Hunting will be discussed in more detail in Section D (Hunting).

Thirty-nine organized groups with a total of 1,520 people utilized the Visitor Center this year. This is quite an increase over last year's 10 groups with 864 people.

Five of the 39 groups (344 persons) took part in National Wildlife Week activities at the refuge. In 1967 only two groups (110 persons) participated in Wildlife Week activities on the refuge.

A total of 14 news releases and one feature article were sent out to local newspapers and refuge personnel taped a total of six radio programs. Table 19 presents a summary of the years public relations efforts by month.

Table 19. Summary of Public Relations Efforts - 1968

Month	News Releases	Radio Programs	On Refuge Tours or Programs	Special Off Refuge Meetings, Programs, Etc.
January				9 (337 persons)
February				11 (1,048 persons)
March	1	1	6 (348 persons)	9 (228 persons)
April	3			11 (325 persons)
May	2		12 (575 persons)	10 (319 persons)
June	2	1	6 (191 persons)	1 (2 persons)
July	2		8 (312 persons)	6 (471 persons)
August	2	2	2 (42 persons)	6 (242 persons)
September	1		4 (31 persons)	2 (25 persons)
October	1	1	1 (21 persons)	7 (168 persons)
November		1		2 (24 persons)
December	2			15 (124 persons)
Totals	15	6	39 (1,520 persons)	113 (3,913 persons)

When you have more people you also have more problems. Littering was a continuous problem, especially in the picnic areas. This

was true also along the nature trail, in and around the Visitor Center and along the self-guided tour. Many beer cans made an appearance as the snow melted in areas that were open to hunting the previous fall.

Vandalism seems to be on the increase along with everything else. Twenty cases of vandalism were noted during the year as compared to one or two last year. Although none of the damage caused was serious (the most expensive was a \$13.00 glass for the Wigwam Picnic Area bulletin board), it is perhaps an indication of things to come.

Generally, the interpretative portion of the recreation program is well accepted by the public. It is surprising however, that many, many people do not realize what a National Wildlife Refuge is or, for that matter, what the Bureau of Sport Fisheries and Wildlife is. They drive in expecting to find animals penned up as in a zoo; the refuge staff are "rangers" and "this is a lovely park (national, state, etc.)".

B. Refuge Visitors

Visitors to Seney this year represented 36 states and the District of Columbia as well as 8 foreign countries. These included Australia, British Honduras, Canada, England, Hong Kong, Poland, South Africa and Switzerland. Official refuge visitors are listed on pages 51-55.

C. Refuge Participation

Refuge staff members participated in a number of meetings, conferences, programs, etc., as evidenced by the list on pages 56-62. Activities which we believe are worthy of special note are the "Wagonland Outdoors" radio program from WGON Munising and "Project Conservation" aired by WTIQ in Manistique. These are regularly scheduled programs in which a number of conservation and resource management agencies participate. We have also agreed to participate in a similar undertaking by writing a feature article for a column to be entitled "Our Natural Resources" in several local newspapers. These activities are enjoyable and an excellent way to present your programs to the public.

OFFICIAL VISITORS

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
01-02-68	Donald Powers, Professor (Biology)	Ann Arbor, Michigan	University of Michigan
01-02-68	Ralph Wall, Professor (Biology)	Ann Arbor, Michigan	University of Michigan
01-02-68	Jacob B. Keller, Professor (Biology)	Ann Arbor, Michigan	University of Michigan
01-04-68	Gordon Hulbert, Engineer In Charge	Escanaba, Michigan	U.S. Geological Survey
01-04-68	Charles Doonan	Escanaba, Michigan	U.S. Geological Survey
01-12-68	Lloyd Steinhoff	Munising, Michigan	U.P. Power Company
01-16-68	Clifford Sahn, Owner	Bark River, Michigan	Sahn Equipment Company
02-06-68	Larry Danville, Trooper	Newberry, Michigan	Michigan State Police (Train Dog)
02-06-68	John German, Trooper	Marquette, Michigan	Michigan State Police (Train Dog)
02-13-68	Wood Holbrook, Operator & Mechanic	Oak Harbor, Ohio	Ottawa Civilian Conservation Center
02-13-68	Dick Berry, Head Cook	Oak Harbor, Ohio	Ottawa Civilian Conservation Center
02-13-68	Ilo H. Bartlett, Retired Head	Lansing, Michigan	Michigan Conservation Department
02-26-68	Herb Dill, Regional Biologist	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
02-26-68	Dr. Carlton M. Herman, Chief	Laurel, Maryland	Patuxent Wildlife Research Center
02-26-68	Dr. I. Barry Tarshis, Parasitologist	Laurel, Maryland	Patuxent Wildlife Research Center
02-28-68	William Aultfather, Regional Forester	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
03-04-68	Leland Anderson, Fishery Biologist	Newberry, Michigan	Michigan Conservation Department
03-06-68	John Winship, Pilot-Biologist	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
03-06-68	Dr. William Green, Biologist	Winona, Minnesota	Upper Mississippi Refuge
03-06-68	William Aultfather, Regional Forester	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
03-06-68	Stanley Baldwin, Field Aid	Lansing, Michigan	U.S. Weather Bureau
03-11-68	Rex Beadle, Radio Engineer	Newberry, Michigan	Michigan Conservation Department
03-19-68	Carl P. Bennett Jr.	Lansing, Michigan	Michigan Conservation Department
03-19-68	David A. Arnold, Game Biologist	Lansing, Michigan	Michigan Conservation Department
03-19-68	Robert Odom, Game Biologist	Sault Ste. Marie, Mich.	Michigan Conservation Department
03-19-68	Emil Ahlen, Owner	Escanaba, Michigan	Escanaba Seed & Feed Company
03-20-68	Norman W. Remington	Escanaba, Michigan	Michigan Department of Agriculture
03-29-68	Robert Barr, Trooper	Manistique, Michigan	Michigan State Police (First Aid)
03-29-68	Leland Anderson, Fishery Biologist	Newberry, Michigan	Michigan Conservation Department
03-29-68	Charles Doonan	Escanaba, Michigan	U.S. Geological Survey
04-09-68	Willard M. Spaulding, Jr. (Fisheries)	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
04-10-68	Larry McNeil, Reporter & Photographer	Sault Ste. Marie, Mich.	WWUP--TV, Channel 10

OFFICIAL VISITORS

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
04-17-68	Cecil Taylor, Fire Officer	Newberry, Michigan	Michigan Conservation Department
04-17-68	Gary Mandey, Research Student	East Lansing, Michigan	Michigan State University
04-23-68	Ewin Simi, WUC	Manistique, Michigan	Soil Conservation Service
04-23-68	Chris Schotte, Student	Kalamazoo, Michigan	Western Michigan University
04-23-68	William B. Potter, Student	Kalamazoo, Michigan	Western Michigan University
04-23-68	Jack S. Wood, Professor	Kalamazoo, Michigan	Western Michigan University
04-24-68	Ralph Bailey, Regional Game Biologist	Marquette, Michigan	Michigan Conservation Department
04-26-68	Sergej Postupalsky	Warren, Michigan	Michigan Audubon Society
05-02-68	R.J. Parkinson, Trooper	Manistique, Michigan	Michigan State Police (First Aid)
05-02-68	H.C. Chappell	Escanaba, Michigan	U.S. Forest Service
05-02-68	Alfred H. Troutt, Supervisor	Escanaba, Michigan	U.S. Forest Service
05-13-68	Dr. Wakelin McNeel Jr.	Mt. Pleasant, Michigan	Central Michigan University
05-13-68	R.J. Parkinson, Trooper	Manistique, Michigan	Michigan State Police (First Aid)
05-14-68	John Cross, GMA	Bay City, Michigan	U.S. Fish and Wildlife Service
05-15-68	Peter Drake, Manager	Brimley, Michigan	Pendills Creek Fish Hatchery
05-15-68	Paul Webb, Biologist	Brimley, Michigan	Pendills Creek Fish Hatchery
05-15-68	Bill King, Hatcheryman	Brimley, Michigan	Pendills Creek Fish Hatchery
05-15-68	Lloyd Stienhoff, Office Manager	Munising, Michigan	U.P. Power Company
05-15-68	George Johnson, Sales Manager	Munising, Michigan	U.P. Power Company
05-20-68	Tom Luken, Div. Fish Hatcheries	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
05-20-68	Lyle Miller, Regional SAFETY Officer	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
05-22-68	Charles Cook, Fisheries Technician	Brimley, Michigan	Pendills Creek Fish Hatchery
05-22-68	Bill King, Hatcheryman	Brimley, Michigan	Pendills Creek Fish Hatchery
05-22-68	Bruce M. McLeod, Fisheries Technican	Brimley, Michigan	Pendills Creek Fish Hatchery
05-22-68	Ed and Ann Boyes	Detroit, Michigan	Recording Bird Songs
05-27-68	Bill Shake, Ass't State Supervisor	Lansing, Michigan	Division of Wildlife Services
06-03-68	Forrest Carpenter, Regional Refuge Supvr.	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
06-03-68	James Monnie, Ass't Reg. Refuge Supvr.	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
06-03-68	Jim Kimball, Minneapolis Tribune	Minneapolis, Minnesota	Minneapolis Tribune
06-03-68	William B. Potter, Student	Kalamazoo, Michigan	Western Michigan University
06-05-68	Fabian LaTocha	Newberry, Michigan	Mich. Depart. of State Highways
06-05-68	John H. Singleton	Newberry, Michigan	Mich. Depart. of State Highways
06-06-68	Ray Wright, Construction Engineer	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
06-06-68	H.L. Bever, Engineer	Boston, Massachusetts	U.S. Fish and Wildlife Service

OFFICIAL VISITORS

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
06-12-68	William A. Klamm	Lakewood, Ohio	Wilson Ornithological Society
06-21-68	William Hutchinson, Ass't Manager	Saginaw, Michigan	Shiawassee Nat'l Wildlife Refuge
06-25-68	Eugene Johnson, Engineer	Manistique, Michigan	Schoolcraft County Road Commission
06-25-68	Sergej Postupalsky	Warren, Michigan	Michigan-Detroit Audubon Society
06-25-68	Ralph Bailey, Reg. Game Biologist	Marquette, Michigan	Michigan Conservation Department
06-27-68	Dr. Arch B. Cowan	Ann Arbor, Michigan	University of Michigan
07-05-68	Gordon W. Watson, U. of Michigan	Ann Arbor, Michigan	Bureau of Commercial Fisheries
07-08-68	Marv Duncan	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
07-08-68	Chuck Johnston	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
07-10-68	Mrs. C.S. Johnson	Manistique, Michigan	Visit (Wife first Refuge Mgr.)
07-12-68	Dr. James H. Barrow Jr.	Hiram, Ohio	Hiram College
07-17-68	Richard N. Smith, Supervisor	Columbus, Ohio	Division of Wildlife Services
07-17-68	Bill Shake, Ass't State Supervisor	Lansing, Michigan	Division of Wildlife Services
07-17-68	Clarence Faulkner, Supervisor	Minneapolis, Minnesota	Division of Wildlife Services
07-18-68	Dr. Maynard C. Bowers, Professor	Marquette, Michigan	Northern Michigan University
07-18-68	Martin Kopenski, Instructor	Marquette, Michigan	Northern Michigan University
07-26-68	Mr. & Mrs. Harrell F. Mosbaugh	Billings, Montana	Chairman, Missouri Basin Field committee
07-31-68	Hugh Beattie, Supervisor, Nat'l Parks	Munising, Michigan	Pictured Rocks Nat'l Lakeshore
08-01-68	Clair Rollings, Staff Specialist	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
08-01-68	William Aultfather, Regional Forester	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
08-01-68	Jim Gritman, Central Office Forester	Washington, D.C.	U.S. Fish and Wildlife Service
08-01-68	Stanley Baldwin, Field Aid	Lansing, Michigan	U.S. Weather Bureau
08-05-68	Dr. Glen A. Sherwood, Wildlife Research	Jamestown, N. Dakota	U.S. Fish and Wildlife Service
08-08-68	Francis V. Olson, Retired Reg. Engineer	Albuquerque, N. Mexico	Retired Region 2
08-08-68	Lynn A. Greenwalt, Assoc. Reg. Supvr.	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
08-12-68	Peter B. Dring, Naturalist	Willow Springs, Ill.	Cook County Forest Reserve
08-14-68	Roger A. Schulz, Fisheries Aid	Brimley, Michigan	Pendills Creek Fish Hatchery
08-14-68	Dwight T. Teetle, Fisheries Aid	Brimley, Michigan	Pendills Creek Fish Hatchery
08-14-68	William King, Hatcheryman	Brimley, Michigan	Pendills Creek Fish Hatchery
08-15-68	Lewis C. Rinch	Lansing, Michigan	Michigan Conservation Department
08-19-68	Stanley Baldwin, Field Aid	Lansing, Michigan	U.S. Weather Bureau
08-20-68	Jim Coyner, Federal Aid	Minneapolis, Minnesota	U.S. Fish and Wildlife Service

OFFICIAL VISITORS

<u>Date</u>	<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
08-30-68	Jack Frye, Manager	Saginaw, Michigan	Shiawassee Nat'l Wildlife Refuge
08-30-68	William Hutchinson, Ass't Manager	Saginaw, Michigan	Shiawassee Nat'l Wildlife Refuge
08-30-68	Lawrence Blazo, Operator General	Saginaw, Michigan	Shiawassee Nat'l Wildlife Refuge
08-31-68	Frank McCamey & family	Milford, Ohio	Cincinnati Nature Center
09-03-68	Fritz Krege	Columbia, S. Dakota	Sand Lake National Wildlife Refuge
09-08-68	Ira N. Gabrielson	Washington, D.C.	Retired
09-10-68	Ralph Bailey, Regional Game Biologist	Marquette, Michigan	Michigan Conservation Department
09-10-68	William Oswald, Graduate Student	Houghton, Michigan	Michigan Technological University
09-17-68	Carol Evenson, Secretary (Engineering)	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
09-17-68	Harold L. Mortensen	Flint, Michigan	Axel Mortensen (Retired - Deceased)
09-17-68	Kenneth O. Mortensen	Detroit, Michigan	Axel Mortensen (Retired - Deceased)
09-19-68	Bill R. Heystik	Kalamazoo, Michigan	Ithaca Gun Company
09-24-68	R.E. Chandler, Biologist	Aurora, Ontario	Canadian Wildlife Service
09-24-68	W.A. Creighton, Biologist	Newmarket, Ontario	Department of Lands and Forests
09-25-68	John Winship, Pilot-Biologist	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
09-25-68	Dr. William Green, Biologist	Winona, Minnesota	U.S. Fish and Wildlife Service
09-25-68	Robert Personius	Mayville, Wisconsin	Horicon National Wildlife Refuge
09-26-68	James Wicks, Recreation Planner	Lansing, Michigan	Michigan Department of Conservation
09-26-68	Gary Evans, Planner	Ann Arbor, Michigan	Bureau of Outdoor Recreation
09-27-68	A.F. Hall	Shorewood, Wisconsin	Wisconsin Conservation Department
10-04-68	Orlynn J. Halladay & family	Death Valley, California	National Park Service
10-15-68	Pershing Trembath	Marquette, Michigan	State Civil Defense
10-23-68	Larry Hough, Field Engineer	Escanaba, Michigan	U.S. Geological Survey
10-24-68	D.R. Gascoyne	Sheepscot, Maine	Retired Regional Director, Boston
10-24-68	"Shine" Sundstrom	Sault Ste. Marie, Mich.	Soo Evening News
11-13-68	Earl Eliason	Minneapolis, Minnesota	U.S. Fish and Wildlife Service
11-18-68	Dr. & Mrs. Karl Lagler	Ann Arbor, Michigan	University of Michigan
11-20-68	Paul Michelin, Engineer	Newberry, Michigan	Mich. State Highway Department
11-21-68	Charles T. Hiltz, Manager	Elmira, Michigan	Jordan River Nat'l Fish Hatchery
12-19-68	Charles J. Lavender, Superintendent	Newberry, Michigan	Luce County Road Commission
12-19-68	E.E. Varner, Conservation Officer	Grand Marais, Michigan	Mich. Department of Natural Resources

FREQUENT VISITORS TO REFUGE DURING 1968

<u>Name and Title</u>	<u>Address</u>	<u>Representing</u>
Richard C. Branzell, GMA	Escanaba, Michigan	U.S. Fish and Wildlife Service
Leslie Walstrom, Conservation Officer	Curtis, Michigan	Dept. of Natural Resources
John Mattson, Fire Officer	Grand Marais, Michigan	Dept. of Natural Resources
Loyd Schemenauer, Game Biologist	Newberry, Michigan	Dept. of Natural Resources
Ray Salo, Game Biologist	Manistique, Michigan	Dept. of Natural Resources
Leland Anderson, Fish Biologist	Newberry, Michigan	Dept. of Natural Resources
Dr. I. Barry Tarshis, Parasitologist	Laurel, Maryland	Patuxent Wildlife Research Center
John Stuht, Research Aid	Laurel, Maryland	Patuxent Wildlife Research Center
Cameron N. Coe, Predator Trapper	Manistique, Michigan	
Harry Prieskorn, Cooperative Farmer	Germfask, Michigan	
Laverne Macaulay, Cooperative Farmer	Germfask, Michigan	

C. Refuge Participation

Following is a list of public contacts, conferences, etc.

<u>Date</u>	<u>Group Title</u>	<u>No. In Party</u>	<u>Personnel Involved</u>
01-09-68	SCS Annual Meeting -- Fairview School, Manistique, Michigan Off Refuge	52	Wilbrecht Updike
01-16-68	Michigan Week Tourist Promotional Meeting -- County Extension Agent, Manistique, Michigan Off Refuge	20	Wilbrecht
01-22- 25-68	Michigan Department of Conservation Game School at Higgins Lake, Mich. Wilbrecht attended as guest. Off Refuge	100	Wilbrecht
01-29-68	Law Enforcement Workshop -- Crab Orchard, Carbondale, Illinois Off Refuge	38	Updike
02-12-68	Senior Government Day, Buena Vista High School, Saginaw, Michigan General Session Off Refuge	750	Wilbrecht Frye
02-12-68	Senior Government Day, Buena Vista High School, Saginaw, Michigan Conservation Panel Off Refuge	31	Wilbrecht Frye
02-12-68	Seminar and Slide talk, University of Michigan, Ann Arbor, School of Natural Resources Off Refuge	40	Wilbrecht Frye
02-13-68	Student Employment Interviews, University of Michigan Off Refuge	30+	Wilbrecht Frye
02-13-68	Seminar and Slide Talk, Michigan State University, Wildlife and Fisheries Department, E. Lansing, Michigan Off Refuge	15	Wilbrecht Frye
02-14-68	Student Employment Interviews, Michigan State University Off Refuge	30+	Wilbrecht Frye
02-14-68	Slide talk and discussion with Junior Club, Saginaw, Michigan Off Refuge	25	Wilbrecht Frye

<u>Date</u>	<u>Group Title</u>	<u>No. In Party</u>	<u>Personnel Involved</u>
03-14-68	Radio Interview -- WGON, Munising, Michigan Off Refuge	4	Wilbrecht Updike Elias
03-20-68	Germfask School, Wildlife Week 1-4 grades On Refuge	43	Updike Elias Hubbard
03-20-68	Germfask School, Wildlife Week 5-8 grades On Refuge	58	Updike Elias Hubbard
03-20-68	Lincoln School, Manistique, Wildlife Week On Refuge	70	Updike Elias Hubbard
03-21-68	Lakeside School, Manistique, Wildlife Week On Refuge	55	Updike Elias Hubbard
03-21-68	Grand Marais School, Wildlife Week On Refuge	50	Updike Elias Hubbard
03-22-68	Doyle School, Gulliver, Wildlife Week On Refuge	72	Updike Elias Hubbard Wilbrecht
03-25-68	Land Use Seminar, sponsored by Michigan State University and held at Manistique, Michigan Off Refuge	22	Wilbrecht Elias
04-01-68	Land Use Seminar, sponsored by Michigan State University and held at Manistique, Michigan Off Refuge	25	Wilbrecht Elias
04-02-68	Pictured Rocks National Lakeshore Planning Session, Munising, Mich. Off Refuge	50	Wilbrecht Elias Doran
04-16-68	It Pays To Know Program held in in the High School Auditorium of Manistique School Off Refuge	5	Elias
05-02-68	Engadine High School Conservation Class, Engadine, Mich. On Refuge	20	Elias

<u>Date</u>	<u>Group Title</u>	<u>No. In Party</u>	<u>Personnel Involved</u>
05-03-68	Engadine Grade School Group Engadine, Michigan On Refuge	102	Elias Doran
05-04-68	Boy Scouts, Newberry, Michigan Planting Trees at Sub-Hdqs. and Conlon Fields On Refuge	15	Elias Hubbard
05-04-68	4-H Group, Germfask, Michigan Planting Trees at Sub-Hdqs. and Conlon Fields On Refuge	10	Elias Hubbard
05-09-68	Grand Marais School, Grand Marais, Michigan (Head Start, Kindergarten, First and Second Grades) On Refuge	42	Elias
05-10-68	Rock River School Tour, 6th and 7th grades, Rock, Michigan On Refuge	65	Elias
05-11-68	Michigan Audubon Society, Marquette Michigan On Refuge	24	Wilbrecht Elias
05-14-68	C.L. Phelps Intermediate School, Ishpeming, Michigan Off Refuge Slide talk.	141	Elias
05-15-68	Munising High School Biology Class, Munising, Michigan. Slide talk and tour. On Refuge	73	Elias
05-16-68	Newberry State Hospital Group, Newberry, Michigan. Slide talk and tour. On Refuge	34	Elias
05-20-68	Rock River Township School, Rock, Michigan. Conservation Class went on tour and received slide talk. On Refuge	25	Elias
05-24-68	Deerton Elementary School, Deerton, Michigan. Slide talk and tour. On Refuge	65	Elias Hubbard
05-25-68	Brownie Scout Group, Munising, Michigan. On Refuge	25	Elias
05-27-68	Conservation Radio Program Meeting at Manistique, Michigan setting up future programs. Off Refuge	5	Elias

<u>Date</u>	<u>Group Title</u>	<u>No. In Party</u>	<u>Personnel Involved</u>
05-28-68	Slide talk and tour to Hiawatha Elementary School Manistique, Michigan On Refuge	75	Elias
06-12-68	Upper Peninsula Natural Resources Administrators Meeting -- several discussions and tour. On Refuge	21	Wilbrecht Updike Elias Hubbard
06-12-68	South Bend Audubon Society -- tour and talk.; South Bend, Indiana On Refuge	6	Elias
06-14-68	Tape Radio Program "Project Conservation" at WTIQ, Manistique, Michigan Off Refuge	3	Wilbrecht Elias
06-18-68	First Aid session sponsored by the Michigan State Police with Trooper Robert Barr instructing On Refuge	28	Staff Wives Students
06-24-68	First Aid session sponsored by the Michigan State Police with Corporal Davidson instructing On Refuge	29	Staff Wives Students
06-27-68	Slide talk on black fly problem at Seney Refuge by Dr. Tarshis with Refuge Staff and public attending. On Refuge	42	Dr. Tarshis
06-28-68	Slide talk and tour to Manistique Summer Science Class, Manistique, Michigan On Refuge	65	Elias
07-10-68	Slide talk at Indian Lake State Park, Manistique, Michigan Off Refuge	145	Elias
07-10-68	Slide talk on Seney Canada Geese to Northern Michigan University Field Camp at Cusino Lake north of the refuge. Off Refuge	15	Wilbrecht Updike
07-12-68	Tour for Minneapolis Bird Club, Minneapolis, Minnesota On Refuge	35	Elias
07-13-68	Slide talk and tour to Marquette High School Advanced Biology Class, Marquette, Michigan On Refuge	17	Elias

<u>Date</u>	<u>Group Title</u>	<u>No. In Party</u>	<u>Personnel Involved</u>
07-15-68	Dearborn, Michigan, group from Salina Jr. High, summer education trip. Tour of refuge On Refuge	22	Elias
07-17-68	Slide talk to Indian Lake State Park, Manistique, Michigan Off Refuge	157	Elias
07-19-68	Camp Shaw 4-H group. 4-H'ers from all over state, sponsored by Michigan State University. On Refuge	150	Updike Elias
07-24-68	University of Michigan Wildlife students from Camp Filbert Roth (13); Northern Michigan University Graduate Ecology Class (14); and Northern Michigan Graduate Vertebrate Class (11). Talk and tour of refuge. On Refuge	38	Wilbrecht Updike Elias
07-24-68	Germfask Township Meeting regarding location of new township dump. Off	22	Doran
07-29-68	Curtis Elementary School, 6th and 7th grades, Curtis, Michigan. On Refuge	40	Elias
07-29-68	National Audubon Members, Canton, Ohio. Tour of refuge. On Refuge	2	Elias
07-31-68	University of Michigan Aquatic Plants Class from Pellston, Mich. Tour and talk. On Refuge	8	Fjetland
07-31-68	Slide talk at Indian Lake State Park, Manistique, Michigan Off Refuge	117	Elias
08-07-68	Slide talk at Indian Lake State Park, Manistique, Michigan Off Refuge	127	Elias
08-08-68	Tape radio program "Wagonland Outdoors" at WGON Radio, Munising, Michigan. Off Refuge	2	Elias

<u>Date</u>	<u>Group Title</u>	<u>No. In Party</u>	<u>Personnel Involved</u>
08-08-68	Manistique Lakes Church Camp group. Dr. Glen A. Sherwood, Northern Prairie Wildlife Research Center was helping out at the camp and conducted the tour. On Refuge	25	Dr. Sherwood
08-09- -10-68	Give slide talk and program to Inland Bird Banding Association at their annual meeting at Mich. Technological University, Houghton, Michigan Off Refuge	65	Wilbrecht Elias
08-22-68	Slide talk and tour for Conservation Class of Taylor University On Refuge	17	Elias
08-25- -29-68	Law Enforcement Workshop at Madison, Wisconsin Off Refuge	34	Elias Hubbard Doran
08-30-68	Tape radio program at WTIQ Radio, Manistique, Michigan Off Refuge	3	Wilbrecht Elias
09-05-68	Bureau of Commerical Fisheries Biologists, Lamprey Program, orient to refuge program and goose management. On Refuge	5	Wilbrecht
09-09-68	Dr. Ira Gabrielson in -- gave tour of refuge. On Refuge	3	Wilbrecht
09-25-68	Defensive Driving Course held at Refuge Visitor Center with Regional SAFETY Officer Lyle Miller instructing. On Refuge	21	Staff
09-27-68	Took Mr. and Mrs. Oscar Jenkins, Nature Photographer and Lecturer, on tour of refuge. On Refuge	2	Elias
10-04-68	Tape radio program "Project Conservation" at WTIQ Radio, Manistique, Michigan Off Refuge	2	Elias
10-15-68	Trapping and Deer Regulations Meeting of Michigan Department of Conservation, Escanaba, Michigan Off Refuge	15	Wilbrecht

<u>Date</u>	<u>Group Title</u>	<u>No. In Party</u>	<u>Personnel Involved</u>
10-16-68	Gave slide talk to Marquette Audubon Society at Northern Michigan University -- Off Refuge	38	Elias
10-17-68	Gave slide talk to Tahquamenon Sportsmen Club at Newberry, Michigan -- Off Refuge	44	Updike
10-19-68	Gave slide talk and tour to Bishop Barraga High School Biology Class of Marquette, Michigan - On Refuge	21	Elias
10-22-68	Showed movie "Good Riddance" and discussed Lake Michigan oil spill and botulism with Germfask-Seney Lions Club at Seney, Michigan Off Refuge	15	Wilbrecht Updike
11-13-68	Taped radio program "Project Conservation" at WTIQ Radio at Manistique, Michigan Off Refuge	2	Elias
12-11-68	Attended liquid fertilizer sales demonstration at Township Hall in Lakefield, McMillan, Michigan Off Refuge	20	Wilbrecht
10-22-68	Delivered Refuge Revenue Sharing Check for \$6,914.45 to Schoolcraft County Treasurer William Cowman in Manistique, Michigan Off Refuge	3	Wilbrecht

In addition to the above the following meetings were attended by members of the refuge staff:

Manager Wilbrecht and Biologist Updike attended the Germfask-Seney Lions Club meetings on the second and fourth Tuesday evenings of each month. Several programs were presented.

Assistant Manager Elias attended several Toastmasters International meetings at Newberry. These meetings were held both in the morning and evening.

Clerk Doran held recreation classes at the Germfask Elementary School on Wednesday and Friday nights throughout the year. Each night a total of three hours were spent working with the Germfask school children.

D. Hunting

1. General. The Hunting and Fishing Plan originally submitted in August 1967 was returned to us for clarification and revision. These were made and the plan was resubmitted in March 1968 and final approval received in August. After the Notice of Proposed Rule Making was duly published, Seney was added to those refuges listed as open to upland game and migratory game birds.
2. Upland Game and Migratory Birds. For the first time since 1946 a portion of the refuge was opened to small game hunting (excluding waterfowl, but including Jacksnipe and Woodcock). The open area of 29,720 acres lies west of the Walsh Ditch. The map indicates the various control areas and the prescribed seasons are printed on the reverse.

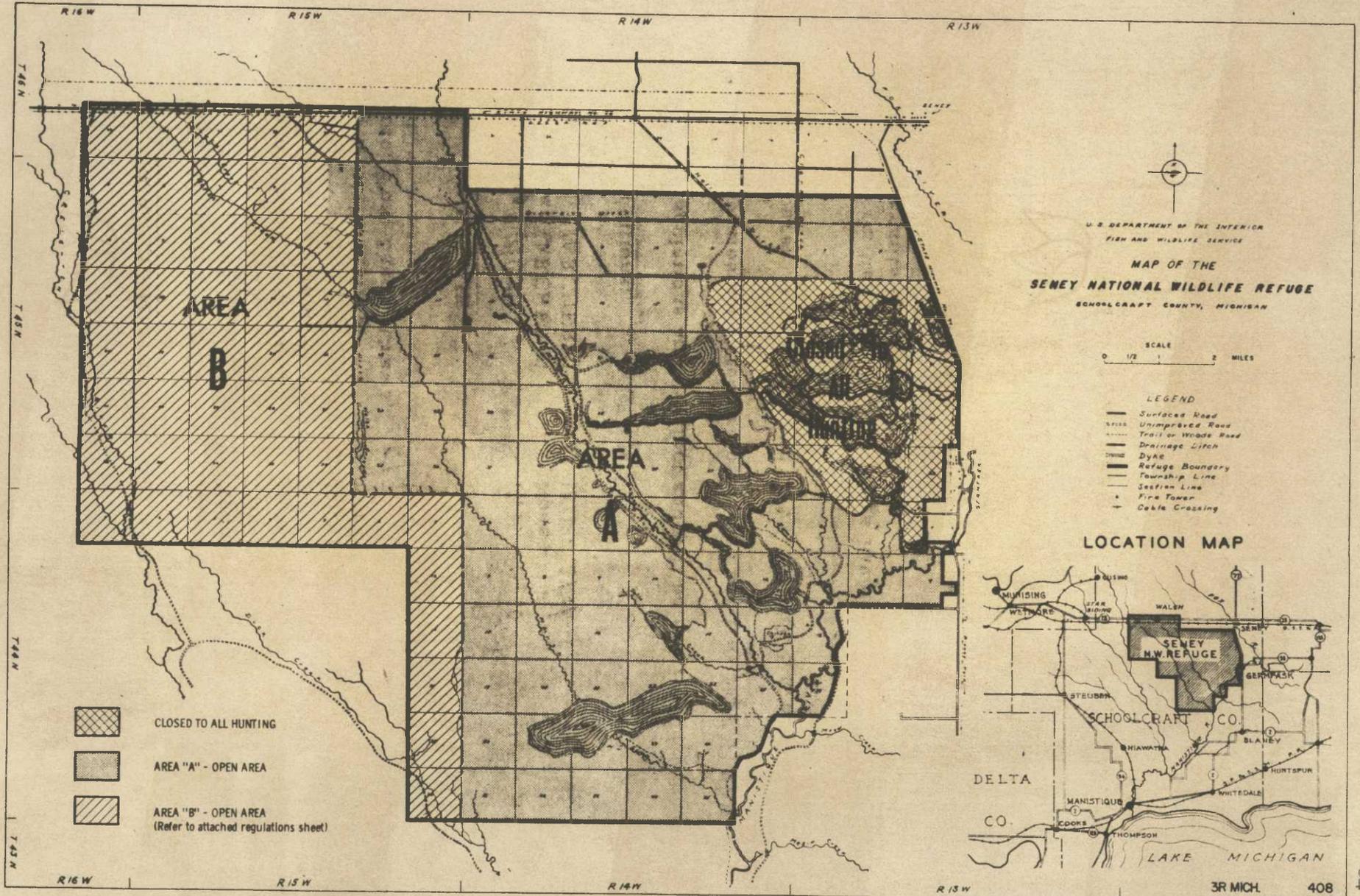
Sharp-tailed Grouse were definitely down in numbers, especially on the heavily hunted Bullock Ranch area along M-28 and west at the Holland Ditch. Opening day gunners picked up a few birds from unwary coveys, but as the season progressed few, if any, birds were even flushed. There may have been a few Sharptail taken off the refuge along the west Creighton Road boundary incidental to other small game hunting.

Ruffed Grouse populations were down below last year, but as usual some "hot spots" exist. Few birds were known shot on the refuge. The old Walsh Creek bottom held a few birds, but three hours of hunting the Creighton River oxbows by Wilbrecht and Elias produced one flush.

Woodcock provided fairly good sport for the "peculiar few" who pursue this excellent target. Most woodcock are probably shot at incidental to grouse hunting, but the refuge does offer some fine stream side habitat for those willing to buck the tag alders. Several "hot spots" produced some local birds but the best hunting, of course, came in late October as a good flight of migrants appeared. The wet soils during fall undoubtedly allowed the birds to scatter more than usual into more upland habitat.

Snowshoe Hare hunting was reportedly excellent along M-28 west of the Walsh siding. Few hunters tramped the deep snows of December to harass the hares.

3. Goose and Duck. The goose hunting closure remained in effect for the third season around the refuge. The area extends approximately 10 miles east and 7 miles south and south-east. After the disastrous gosling die-off and to take advantage of recruitment of already protected birds into the breeding population the State agreed to go along at least for one more year.



U. S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

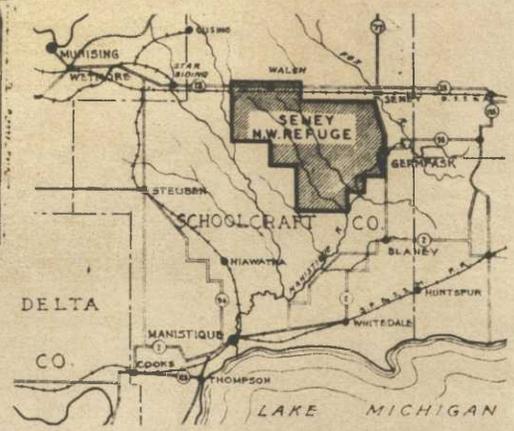
**MAP OF THE
SENEY NATIONAL WILDLIFE REFUGE**
SCHOOLCRAFT COUNTY, MICHIGAN

SCALE
0 1/2 1 2 MILES

LEGEND

- Surfaced Road
- Unimproved Road
- Trail or Woods Road
- Drainage Litch
- Dyke
- Refuge Boundary
- Township Line
- Section Line
- Fire Tower
- Cable Crossing

LOCATION MAP



- CLOSED TO ALL HUNTING
- AREA "A" - OPEN AREA
- AREA "B" - OPEN AREA
(Refer to attached regulations sheet)

1968 - 1969
REFUGE HUNTING REGULATIONS

<u>SMALL GAME</u>	<u>SEASON DATES</u>	
	<u>AREA A</u>	<u>AREA B</u>
Ruffed grouse (Partridge)	None	9/15 - 11/14
Sharptailed grouse	None	10/1 - 11/10
Woodcock	None	9/15 - 11/14
Wilson's Snipe (Jacksnipe)	None	State season dates
Varying hare (Snowshoe)	11/15 - 3/31/69	10/1 - 3/31/69
Raccoon	11/15 - 12/15	10/1 - 12/15
Gray & Black Squirrel	None	10/1 - 11/10
Coyote, Fox, Skunk, Crows, and Porcupines	11/15 - 3/31/69	9/15 - 3/31/69

BIG GAME

Deer & Bear (GUN)	11/15 - 11/30	11/15 - 11/30
Deer & Bear (ARCHERY)	None	10/1 - 11/14
Deer (ARCHERY)	12/1 - 12/31	12/1 - 12/31

Special Conditions:

All State Regulations are in effect and will be enforced.

All other species not listed are protected and may NOT be killed.

Shooting Hours: 9/15 - 11/14 and 12/1 - 3/31/69 5 a.m. - 6 p.m. CST
11/15 - 11/30 6 a.m. - 5 p.m. CST

Camping permitted only west of Driggs River 11/13 - 11/30 with Federal and State permits being required.

Fox and raccoons may not be taken at night.

All motorized conveyances are prohibited from traveling on dikes or off established roads and trails. Motorized bikes and snow sleds are not permitted ON refuge.

Future seasons on the refuge will depend on hunter conduct!

Refuge Manager
Seney National Wildlife Refuge
Seney, Michigan 49883

Phone Curtis 586-6504

Local acceptance was generally good as no organized opposition developed. However, it was difficult to ignore all the grumbling as a record number of migrant geese passed through and stopped to rest, feed and tantalize the local goose shooters.

Duck season was good on locals early and tapered off rapidly. This isn't good duck hunting country. Few hunters were observed and those checked had limited success.

4. Big Game -- Deer and Bear. A wet, soggy day greeted about 600 hunters (800 last year). Only a scattered trace of snow lay in the woods for the first two days. Conditions improved with 2-4" of snow on the ground by the 18th; but a storm early the 19th dumped nearly 11" chasing many of the hunters out of the Upper Peninsula and starting the deer moving off the refuge. The 12-14" on the ground (on the 20th) didn't last long as thawing weather settled it down to 2-4". With additional fresh falls of an inch on the 25th and 26th hunters had excellent tracking cover for the last two-thirds of the season.

Generally hunting conditions were good through most of the season. Temperatures were usually in the mid to high 30's during the day, dropping into the 20's overnight. The high was 45 on the 23rd and the low of 14 was recorded on the 30th; the last day. The high temperature of 45 on the 23rd was accompanied by the worst weather of the season when a dense fog and heavy mist restricted visibility to 50 feet -- few "deer chasers" trekked the woods that day. Overall, 20.25" of snow fell during the 15 days.

We operated a check station at Sub-headquarters for the first three days (22 hours). About 180 hunters (excluding campers) checked 41 deer for a 22.7% success for the first 3 days of the season. Random field checks added another 16 for a total of 57 (27 last year). This data is sent to the Michigan Department of Natural Resources to be used in compiling their kill figures. Because of the rather mild weather prior to and during the first three days of the season hunters working the East Walsh opening and the West Walsh Farm areas had one of the best seasons in the last 5 years. Normally pre-season snows have pushed the deer out of these areas and the north end of the refuge. Reliable reports indicate 11 bucks (all adult with large racks) were harvested there.

The total kill was estimated at 140 compared to 125 in 1967 and 130 in 1966. The following table compares deer checked on the refuge. It is not a comparison of the kill for each year, but is included only for general interest.

Table 20. Deer Checked on Senej Refuge During Seasons and Estimated Total Kill.

Age		1966	1967	1968
Fawns	M	5	4	5
	F	0	4	8
1½	M	5	4	14
	F	4	3	3
2½	M	8	1	4
	F	2	0	4
3½	M	7	0	8
	F	1	3	1
4½ +	M	4	2	5
	F	1	2	2
Ad. Unknown	M	0	3	2
	F	0	1	1
Total Checked	M	29	14	38
	F	8	13	19
		37	27	57
Estimated Kill		130	125	140
Estimated Hunters		1,500	800	700

This year we opened the refuge 2 days before the season in order to give campers an extra day to set up and scout a hunting area. As few campers knew of this only 2 camps checked in on the 13th while 13 registered on the 14th. Total camps were 26 for 449 camper-days compared to 25 and 332 days in 1967.

E. Violations

Patrols during the goose season were stepped up considerably this year to enforce the third year of closure in the area surrounding the refuge. No apprehensions were made by the refuge, but several cases of shooting geese in the closed area were successfully prosecuted by the Department of Natural Resources enforcement

people. We aren't naive enough to believe there were no violations; however, fairly intensive patrols turned up little indication that violations were extensive.

One patrol team (Doran and Strecker) working with C. O. Walstrom near the Old Seney Road-M-98 Junction and the Russell Zellar farm spooked some goose shooters. Before things calmed down the CO's car had four slashed tires (it had been "hidden" in an off the road field) and the culprits escaped undetected.

The attempted assault on two CO's and a refuge staff member which occurred in October 1967 and was reported in the 1967 Narrative Report (pages 41-42) appears to have screeched to an inglorious halt. What we have irreverently called the "Hal Smith Case" was settled without our knowledge through apparent "back door" contacts between the Federal Attorney at Grand Rapids and the State Prosecutor in Manistique.

It ended with the violator getting a \$35.00 fine for failure to show a license. No State charge of obstructing an officer or Federal charges for attempted assault and threatening a Federal Officer were even filed. We were extremely disappointed at the outcome of this case which appeared simple and well well documented. We don't expect to win 'em all, but fear that in time our timorous acceptance of these results as "normal" will destroy enforcement incentive.

No major violations were detected during the deer season, although shining activity has picked up considerably in the local area. Rumors had deer caracasses selling for up to \$100.00 during the season. Several shiners were spooked from their kill by the Prillwitz Camp on the south end of the Creighton Trail. The Department of Natural Resources people handled this. We suspect that some shenanigans are going on with the tags in that hunters may be killing antlerless deer, leaving them in the woods then attempting to get a buck. If unsuccessful they'll later appear with a pretty stiff doe or fawn carcass--sometimes indicating "I lost my tag."

F. SAFETY

Formal monthly SAFETY meetings were held throughout the year. A listing of the discussion leaders and topics are as follows:

<u>Month</u>	<u>Topic</u>	<u>Discussion Leader</u>
January	Snowmobile SAFETY	Doran

<u>Month</u>	<u>Topic</u>	<u>Discussion Leader</u>
February	Regional Office Life Lines on Winter Driving	Updike
	Operation of Western Snow Plow	Orlich
March	Water Control SAFETY	Updike
April	Spring Fire Season and Fire Line SAFETY	Hubbard
	Proper Communications and Dispatching	Doran
	Demonstration of Fire Equipment	Wilbrecht & Orlich
May	Accident Analysis Control Report for C.Y. 1967	Wilbrecht
June	Hand Tool SAFETY	Losey
	Student SAFETY Orientation at Visitor Center.	Wilbrecht Updike
July	Loading, Hauling and Mulching of Hay	Updike
August	General SAFETY and Attitude toward Refuge SAFETY Program	Wilbrecht
September	Defensive Driving Course	Lyle F. Miller
October	Bridge Construction Work SAFETY	Wilbrecht
November	Snowmobile SAFETY and Maintenance	Wilbrecht
December	Winter Driving (Regional Office "Life Lines")	Wilbrecht

Several other SAFETY discussions were held throughout the year including Refuge Station SAFETY Committee meetings on the second Wednesday of each month. This committee consisted of Ass't Manager Updike, Chairman; Clerk Doran, Secretary; Forester Hubbard and Mechanic Orlich, members.

At the close of the year the station SAFETY record was 1,335 days without a lost-time accident. Broken down, 86,476 cumulative hours since the last lost-time accident on May 12, 1965. The cumulative hours do not include overtime (paid or voluntary), time of research workers or cooperators who work on the refuge.

Several unsafe conditions were corrected during the year.

1. Show Pool bridge and structure fitted with extended side rails and gravel hauled in to build up walk approaches.

2. New decking and pipe rails on the Upper Goose Pen bridge on the Pine Creek Road. This bridge is heavily used by evening guided tours, by refuge staff and during hunting season.
3. Cement bridge curbing painted with reflective yellow paint.
4. On May 20, 1968, at our request, SAFETY Officer Miller inspected our facilities and made recommendations for approval. As a result of this inspection and Mr. Miller's recommendations we believe many potentially hazardous items were brought to light and corrected.

Refuge personnel were not involved in any personal injury accidents this year. Temporary laborer Miller (1967 Summer Temporary Employee from 6-13-67 to 2-9-68) was operated on for a slight hernia which he found out about when he went for a pre-induction physical. This was not caused by refuge work.

One accident occurred during the November 15-30 deer season. One vehicle (1968 Ford station wagon) was going into the refuge and another vehicle coming out (1966 Ford $\frac{1}{2}$ -ton pickup) came together on a curve on the Chicago Farm Road, 5.6 miles from Sub-headquarters gate. A wet snow had fallen that morning and several vehicles had driven over the road packing it down, making the road quite slippery. Estimated damage to the station wagon was less than \$100.00. However the pickup had to be towed away and damage was estimated at \$350.00-\$400.00.

First Aid Instruction

On June 18, Trooper Robert Barr of the Michigan State Police, Manistique Post, conducted a 2 $\frac{1}{2}$ hour refresher course on "First Aid to the Injured". On June 24 another session on first aid was held with Corporal Davidson, Manistique Post of the Michigan State Police leading the discussion and demonstration. This was on mouth-to-mouth resuscitation and bandaging. All refuge employees and their wives attended.

VII. OTHER ITEMS

A. Items of Interest1. Proposed Wilderness Area Status

The Seney-Huron Islands Wilderness proposals were reported by the Senate Committee on July 1 and were passed by the Senate on July 10. However, House passage still remains. We assume this will come sometime in 1969. To date we have received no criteria regarding management or non-management of Wilderness Areas on National Wildlife Refuges.

2. Persomnel

Donald J. Elias joined our staff on March 14 as the Assistant Manager having responsibility for the interpretative and Public Use programs. This position was formerly held by Orlynn J. "Joe" Halladay. Don's home is Trinidad, Colorado and he took his formal training at Colorado State University, Ft. Collins where he received a B.S. degree in Wildlife Biology and Forest Recreation and a M.S. degree in Wildlife.

He served with the Air Force as an officer from 1961-65. Just prior to signing on at Seney, Don spent 3 months in Chile. His wife, Ana, is a resident of Santiago. They now reside on the refuge at Quarters #137.

Gerald H. Updike our recently promoted principal assistant manager transferred to J. Clark Salyer Refuge as Assistant Manager on November 22. Jerry started in June 1965 as a student and received a Career Conditional appointment to Assistant Manager (Biologist) in November that year.

After three years of experience at Seney, Jerry's ability and enthusiasm contributed much toward maintaining the important continuity so necessary with a constant change-over in personnel.

While here his enthusiasm and unselfish volunteering of extra time led to a successful duck banding program. His willing acceptance of all assignments contributed to a smooth biological program. Even though Seney will miss his enthusiastic approach to the program, the experience he will gain at, and the ability he takes to J. Clark Salyer Refuge, will be of great value to him and the refuge system.

His transfer at the height of programming, water plans, Narrative Report, and other important planning projects put a considerable load onto the remaining staff members. Plans are to refill this position by February 1969.

3. Law Enforcement Workshops

Assistant Manager Updike attended a Law Enforcement Workshop at Crab Orchard Refuge on January 29 through February 1. Also, Assistant Manager Elias, Forester Hubbard and Clerk Doran attended a Law Enforcement Workshop at Madison, Wisconsin from August 26-29. These workshops were sponsored by the Bureau. All individuals were successful in completing the course.

4. Cooperation

Assignment to Horicon. Personnel assigned to help out at the Horicon Refuge during the goose hunt were Refuge Forester Hubbard, October 10-25; and Assistant Manager Elias, October 27 - November 5. Both participated in law enforcement and depredation problems.

On February 2, 1968, State Police Officers L. Danville of Newberry, and J. German of Marquette held a training exercise with a German Shepard dog. They drug several items around and hid them in the headquarters and shop areas for the dog to locate. A total of six hours were spent schooling the dog.

5. Special Act Awards

Assistant Manager Updike and Clerk Doran received Special Act Awards in the amount of \$200.00 and \$100.00 respectively for extra accomplishments during the extended vacancy of the assistant refuge manager and the refuge manager's position.

Mechanic George Orlich received a 30 year award pin after completing those years of Government Service on February 10, 1968. With the exception of $4\frac{1}{2}$ years of U.S. Army service during World War II, George's time has been spent at Seney where his abilities and interest have contributed much to this refuge's development. On various occasions he has been called upon to assist with development and equipment projects at Horicon and Necedah.

6. New Arrival

Bernie and Colleen Hubbard became the proud parents of Stephen on December 5. This is the Hubbard's first child. Stephen is the grandson of former Maintenceman William G. Anderson.

7. Refuge Picnic

On August 14 refuge employees and their families enjoyed a pot-luck picnic at the Wigwam Picnic Area. A total of 49 persons attended and enjoyed the delicious meal. A ball game for the children and social gathering for the adults followed.

8. Refuge Softball Team

Again the refuge had enough seasonal employees and students to have a softball team. A total of four games were played with the refuge winning three. Those played were the Michigan Department of Natural Resources at Cusino Research Station (3 games) and a local church group (1 game).

Credits

The report was written by Manager Wilbrecht from data, tables and notes compiled by Assistant Elias and Clerk Doran. Forester Hubbard wrote the sections on Plantings, Fires, Timber Removal and Land Use Planning. Assistant Elias wrote the Recreational Uses portion of Public Relations and compiled the graph and tables.

Assistant Elias ably printed all the photos in the refuge darkroom and wrote many of the explanations.

The most important phase, that of interpreting and deciphering our many odd scribblings, laying out the numerous tables and lists, typing and assembling this into the report was done by Clerk Doran.

SIGNATURE PAGE

Submitted by:

John E. Wilbrecht
(Signature)

John E. Wilbrecht
Refuge Manager

Title

Date: February 12, 1969

Approved, Regional Office:

Date: FEB 17 1969

James B. Mounie
(Signature)

ASST

Regional Refuge Supervisor

3-1750a
 Cont. NR-
 (Rev. March 1953)

WATERFOWL
 (Continuation Sheet)

REFUGE Soney MONTHS OF January 1 TO April 30, 1968

(1) Species	(2) Weeks of reporting period								(3) Estimated	(4) Production	
	3/11-17	3/18-24	3/25-31	4/1-7	4/8-14	4/15-21	4/22-28	4/29-30	waterfowl	broods:	Estimated
	11	12	13	14	15	16	17	18	days use	seen	total
Swans:				7	10	6	5	5		206	
Whistling											
Trumpeter											
Geese:											
Canada	5	250	500	950	1000	1100	1050	1050		32,445	
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard		10	50	300	250	200	150	150		7,020	
Black			50	200	150	100	100	100		4,400	
Cadwall							10	10		90	
Baldpate				5	75	150	100	100		2,510	
Pintail			2	10	20	40	75	75		1,179	
Green-winged teal			5	50	100	175	300	300		5,010	
Blue-winged teal				20	50	120	100	100		2,230	
Cinnamon teal											
Shoveler					5	10	10	10		195	
Wood			5	25	75	100	100	100		2,235	
Redhead						5	5	5		60	
Ring-necked			10	60	200	450	500	500		9,540	
Canvasback						5				35	
Scaup				10	75	175	100	100		2,720	
Goldeneye		5	50	100	75	90	40	40		2,300	
Bufflehead			10	40	100	200	100	100		3,350	
Ruddy											
Other											
XXXXX: H. Merganser		5	40	60	75	50	50	50		2,200	
C. Merganser			10	75	50	40	40	40		1,585	
Coot				10	10	10				210	

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production		SUMMARY
Swans	296	10		Principal feeding areas	All pool areas, marshes and
Geese	32,445	1,100			farm units.
Ducks	46,699	1,870		Principal nesting areas	Geese nest on islands, ducks
Coots	210	10			on marsh edge and dikes.

Data Class B for geese and swans
Data Class C. For ducks and coots

Reported by Gerald H. Uptake, Wildlife Biologist

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

750a
 cont. NR
 (Rev. March 1953)

WATERFOWL
 (Continuation Sheet)

REFUGE Soney

MONTHS OF May TO August, 19 66

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production broods: Estimated seen total	
	7/10-16: 11	7/17-23 12	7/24-30 13	7/31-6 14	8/7-13 15	8/14-20 16	8/21-27 17	8/28-31 18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	1,400	1,350	1,350	1,350	1,350	1,350	1,350	1,350	163,550	175	1,022
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	300	300	300	300	300	300	300	300	32,100	10	150
Black	250	250	250	250	250	250	250	250	29,000	10	100
Gadwall											
Baldpate	10	10	10	10	10	10	10	100	1,940	1	20
Pintail							5	5	615		
Green-winged teal	40	40	40	40	40	40	40	50	5,590		50
Blue-winged teal	150	150	150	150	150	150	200	200	19,700	2	100
Cinnamon teal											
Shoveler								5	55		
Wood	175	175	175	175	175	175	175	175	21,175	2	75
Redhead								10	250		
Ring-necked	500	400	350	350	350	350	350	350	59,125	47	300
Canvasback											
Scaup											
Goldeneye	30	30	30	30	30	30	30	30	4,700	3	25
Bufflehead											
Ruddy											
Other											
XXXXX Common Merganser	75	75	75	75	75	75	75	75	4,205	10	100
Hooded Merganser	200	200	200	200	200	200	200	200	26,145	23	250
Goos	5	5	5	5	5	5	10	10	780		

(over)

	(5)	(6)	(7)		SUMMARY
	Total Days Use	Peak Number	Total Production		
Swans	0	0	0	Principal feeding areas	All Pool Areas, marshes and
Geese	163,550	2,000	1,022		farm units.
Ducks	197,500	1,960	1,165	Principal nesting areas	Geese nest on islands, Ducks
Coots	740	10	0		on marsh edges and dikes.

Reported by Ronald H. Updike

Gerald H. Updike, Wildlife Biologist (Mgt.)

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

WATERFOWL

REFUGE Sandy

MONTHS OF September 1 TO December 31, 1968

(1) Species	(2) Weeks of reporting period									
	9/1-7	9/8-14	9/15-21	9/22-28	9/29-10/5	10/6-12	10/13-19	10/20-26	10/27-11/2	11/3-9
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	1,300	1,700	2,400	2,800	7,000	8,000	7,500	6,000	5,000	4,500
Cackling										
Brant										
White-fronted										
Snow						5				
Blue						5				
Other										
Total	1,300	1,700	2,400	2,800	7,000	8,010	7,500	6,000	5,000	4,500
Ducks:										
Mallard	500	600	700	900	1,000	900	1,000	1,000	900	600
Black	650	700	800	950	1,100	1,000	1,000	950	800	700
Gadwall										
Baldpate	200	250	350	400	450	400	350	300	100	75
Pintail				10	5	5	5			
Green-winged teal	200	200	200	400	200	250	350	150	75	
Blue-winged teal	300	400	450	250	75	100	50	10		
Cinnamon teal										
Shoveler										
Wood	200	200	200	350	250	200	200	50	10	
Redhead						120	60			10
Ring-necked	300	300	300	1,000	3,000	8,000	9,300	2,000	900	500
Canvasback				10	15	15	20	25		
Scaup										
Goldeneye						50	40	15	75	50
Bufflehead									50	30
Ruddy										
C. Merganser	75	75	75	75	100	100	125	150	100	100
H. Merganser	200	200	100	100	200	200	200	200	300	300
Total	2,625	2,925	3,175	4,445	6,395	11,310	12,900	5,060	2,310	2,365
Coot	10	10	10	450	600	600	550	100		

3-1770a
 Form W-1
 (Rev. May 1953)

WATERFOWL
 (Continuation Sheet)

RANGE Seney

MONTHS OF September 1 TO December 31, 1968

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production broods: Estimated seen total
	11/10-16	11/17-23	11/24-30	12/1-7	12/8-14	12/15-21	12/22-28	12/29-31		
Swans:										
Whistling									28	
Trumpeter										
Geese:										
Canada	4,500	1,700	500	100	10	10	10	10	371,240	
Cackling										
Brant										
White-fronted										
Snow									35	
Blue									35	
Other <u>Total</u>	4,500	1,700	500	100	10	10	10	10	371,310	
Ducks:										
Mallard	150	10							53,020	
Black	600	50							53,700	
Cadwall										
Baldpate									22,925	
Pintail									175	
Green-winged teal									14,175	
Blue-winged teal									11,445	
Cinnamon teal										
Shoveler										
Wooi									11,620	
Redhead									1,330	
Ring-necked									176,400	
Canvas back										
Scup									335	
Toldene	30								1,500	
Bufflehead	30								1,500	
Bull										
Other <u>I. Merganser</u>	75								7,150	
Other <u>II. Merganser</u>	100								11,700	
<u>Total</u>	985	60							380,095	
Cost									16,310	

	(5)	(6)	(7)
Total Days Use :	Peak Number :	Total Production :	
Swans	28	4	
Geese	371,310	8,010	
Ducks	380,095	12,900	
Coots	16,310	600	

SUMMARY

Geese: Diversion Field, Walsh Field,
Principal feeding areas Sub-Hdqs., Chicago Farm, Conlon Farm,
B-1, D-1, E-1, F-1, H-1 and C-3 Pools.
Ducks: B-1, E-1, F-1, G-1, H-1, I-1, J-1, Lower Goose Pen
and C-3 Pools.

Principal nesting areas _____

Reported by _____
John E. Wilbrecht, Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS

(other than waterfowl)

Refuge SneyMonths of January 1to April 301958

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
<u>I. Water and Marsh Birds:</u>										
Common Loon	1	1/12			Summer Resident					15
Pied-billed Grebe	No report				" "					60
American Bittern	1	1/26			" "					5
Great Blue Heron	1	1/2			" "					20
Green Heron	None observed				" "					1
Sandhill Crane	1	3/28			" "					60
Sora	None observed				" "					20
Virginia Rail	None observed				" "					10
<u>II. Shorebirds, Gulls and Terns:</u>										
Woodcock	No report				Summer Resident					600
Common Snipe	1	3/27			" "					500
Yellowlegs	4	1/26			" "					400
Killdeer	2	3/27			" "					100
Spotted Sandpiper	None observed				" "					50
Solitary Sandpiper	None observed				" "					10
Information of Data Class D										

(over)

(1)	(2)	(3)	(4)	(5)	(6)	
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	1	3/21	Summer Resident		5	
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Screech Snowy Owl Raven Crow Marsh Hawk Rough-legged hawk Bald Eagle	Resident 1 Resident 10 1 1 Resident	1/2 2 3/1 3/28 3/26	2 2/7 500 30 4/1 4/30	1 Summer Resident " "	3/1 " " " "	40 10 50 600 100 150 11
Information of Data Class A for Bald Eagles Information of Data Class D for all others						
Reported by: <u>Gerald W. Updegraff, Wildlife Biologist</u>						

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1751

Form NR-1A
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)Refuge SensyMonths of May to August 1968

(1) Species Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
I. Water and Marsh Birds:										
Pied-billed Grebe										50
Common Loon	"	"						14	18	50
Great Blue Heron	"	"								125
American Bittern	"	"								150
Sora Rail	"	"								70
Virginia Rail	"	"								50
Sandhill Crane	"	"						50	75	250
Information of Data Class D.										
II. Shorebirds, Gulls and Terns:										
Woodcock										2,000
Wilson Snipe	"	"								350
Killdeer	"	"								150
Yellowlegs	"	"								100
Spotted Sandpiper	"	"								150
Solitary Sandpiper	"	"								50
Black Tern	"	"								500
Common Tern	"	"								100
Information of Data Class D.										

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	Summer Resident				5
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow Bald Eagle Osprey Sparrow Hawk Marsh Hawk	Permanent Resident Permanent Resident Summer Resident • • • • • • • •			2 3	40 50 400 16 4 50 100

Reported by Gerald H. Opalka

Gerald H. Opalka
Wildlife Biologist (Mgt.)

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned

5-1751

Form NR-1A
Nov. 1945)

MIGRATORY BIRDS

(other than waterfowl)

Refuge..... SneyMonths of September 1 to December 31 195 68

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Common Loon	1	4/12	Summer Resident		1	10/17				50
Red-necked Grebe	1	7/7	1	7/7	1	7/7				2
Horned Grebe	4	8/3	4	8/3	4	8/3				4
Pied-billed Grebe	4	4/18	Summer Resident		2	10/24				70
Double-crested Cormorant	1	6/1	2	6/2	1	6/3				2
Great Blue Heron	1	4/2	Summer Resident		2	10/31				150
Green Heron	1	5/21	Summer Resident		1	7/26				10
American Bittern	1	4/26	Summer Resident							10
Sandhill Crane	3	3/28	300	9/5	4	10/11				350
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer	1	3/27	Summer Resident		3	9/19				150
American Woodcock	1	6/28	2,500	End. Oct.						3,000
Common Snipe	2	3/27	Summer Resident							350
Spotted Sandpiper	3	5/14	Summer Resident							150
Solitary Sandpiper			Summer Resident							50
Greater Yellowlegs			Summer Resident							200

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. <u>Doves and Pigeons:</u>									
Mourning dove	1	3/21			1	3/22			
White-winged dove									
IV. <u>Predaceous Birds:</u>									
Golden eagle									
Duck hawk									
Horned owl				Resident					
Magpie Snowy Owl	1	1/2	2	2/7	1	3/1	Winter Resident		40
Raven				Resident					5
Crow	10	3/1	500	4/1					50
Rough-legged Hawk	1	3/26	Summer	Resident					350
Bald Eagle	1	2/18	Summer	Resident	1	12/17			50
Marsh Hawk	1	3/20	30	4/30					12
									75

Reported by

Donald J. Elias

Donald J. Elias, Ass't Refuge Mgr.

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Sagey For 12-month period ending August 31, 1968

Reported by Gerald H. Uptile Title Wildlife Biologist (Management)

(1) Area or Unit Designation	(2) Habitat		(3) Use-days	(4) Breeding Population	(5) Production	
	Type	Acreeage				
Unit I	Crops	134	Ducks	360,150	600	500
	Upland	5,743	Geese	320,450	270	200
	Marsh	6,265	Swans	37	0	0
	Water	2,300	Coots	2,500	0	0
	Total	14,442	Total	683,237	1,070	1,312
Unit II	Crops	230	Ducks	12,200	100	100
	Upland	8,520	Geese	29,900	120	50
	Marsh	3,000	Swans	0	0	0
	Water	2,400	Coots	200	0	0
	Total	19,150	Total	72,360	220	490
Unit III	Crops	60	Ducks	160,610	250	100
	Upland	12,640	Geese	74,260	50	50
	Marsh	46,620	Swans	40	0	0
	Water	2,543	Coots	329	0	0
	Total	61,863	Total	235,239	300	385
Total	Crops	424	Ducks	562,960	1,150	700
	Upland	26,903	Geese	424,870	440	300
	Marsh	55,885	Swans	77	0	0
	Water	7,243	Coots	3,029	0	0
	Total	95,455	Total	990,736	1,590	2,187
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Soney

Months of January 1 to April 30, 1968

(1) Species	(2) Density	(3) Young Produced			(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
		Acres Per Bird	Number broods observed	Estimated Total		Hunting	For Re- stocking	For Research		
Common Name	Cover types, total acreage of habitat				Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ruffed Grouse	Upland pine, hardwood and swamp edge. 30,000 acres	20				0	0	0	1,500	Incidental observations
Sharp-tailed Grouse	Brushland, open ground, farm units, roads and dikes. 10,000 acres	44				0	0	0	225	Incidental observations and dancing ground checks
Spruce Grouse	Spruce-jackpine forest. 10,000 acres	67				0	0	0	150	Incidental observations and student aid project of 1967
<p>Information of Data Class C for Sharp-tailed Grouse Information of Data Class D for other Grouse</p>										
Reported by:										Gerald A. Spruce Wildlife Biologist

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Saney Months of May to August, 19 68

(1) Species	(2) Density	(3) Young Produced			(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
		Acres Per Bird	Number broods observed	Estimated Total		Hunting	For Re- stocking	For Research		
Common Name	Cover types, total acreage of habitat				Percentage					Pertinent information not specifically requested. List introductions here.
Ruffed Grouse	Upland pine, hardwood and sawp edge. 30,000 acres	23	4	600		0	0	0	1,300	Incidental observations
Sharp-tailed Grouse	Brushland, open terrain, farm units, roads and dikes. 10,000 acres	50	3	100		0	0	0	800	Spring census and incidental observations
Spruce Grouse	Spruce and Jack- pine forest 5,000 acres	60	6	50		0	0	0	125	Incidental observations

Information of Data Class C for Sharp-tailed Grouse.
Information of Data Class D for other Grouse.

Gerald H. Uplize
Gerald H. Uplize
Wildlife Biologist (Agt.)

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Savoy

Months of September 1 to December 31, 19 68

(1) Species	(2) Density	(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
		Acres Per Bird	Number broods observed		Estimated Total	Hunting	For Re-stocking		
Common Name	Cover types, total acreage of habitat			Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ruffed Grouse	Upland pine, hardwood and swamp edge. 30,000 acres	23				3		1,300	Incidental observations
Sharp-tailed grouse	Brushland, open terrain, farm units, roads and dikes. 20,000 acres	100				5		200	Incidental observations
Spruce Grouse	Spruce and jackpine forest. 5,000 acres	40				0		125	Incidental observations

Reported by: John E. Wilbrecht, Refuge Mgr.

3-1753
Form NR-
(June 1945)

BIG GAME

Refuge Sandy

Calendar Year 1968

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions	(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number		Source	At period of Greatest use	
White-tailed Deer	Variable - marshland, hardwoods, conifers, brushland and open ground -- 80,000 acres (125 sq. miles)	Unk.	140				Unknown				1,600	50	
Black Bear	Variable - marshland, hardwoods, conifers, brushland and open ground -- 80,000 acres (125 Sq. Miles)	3 observed	2				Unknown				35	30	

Remarks: One bear kill known; fourth spur dike (from north) (NE₄, Sec. 4, R4W, T14N) Riverside Dike during November 15-30 deer season.

Reported by

John E. Ellbracht, Refuge Manager

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Senny

Year ending April 30, 1968

(1) Species Common Name	(2) Density Cover Types & Total Acreage of Habitat Acres Per Animal		(3) Removals					(4) Disposition of Furs					(5) Total Popula- tion	
			Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated		Furs Destroyed
								Permit Number	Trappers Share	Refuge share				
Beaver				28										250
Mink				16	2									500
Muskrat				88										1,400
Otter														150
Raccoon														200
Coyote													16	50
Red Fox														25
Bobcat														10
Porcupine														250
Striped Skunk														100
Woodchuck														300
Snowshoe Hare														1,000
Red Squirrel														1,000
Grey Squirrel														100

* List removals by Predator Animal Hunter

REMARKS: Census figures are questionable estimates based on incidental observations by the refuge staff and removal numbers

* Fee was paid by trappers to cover administrative costs. Control type program on water supply ditches.

Reported by Gerald H. Spilke, Wildlife Biologist

Refuge Sandy

Year 19 68

Botulism

Lead Poisoning or other Disease

Period of outbreak None

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized No. Recovered % Recovered

(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) _____

Condition of vegetation and invertebrate life _____

Remarks _____

Leucocytozoon

Kind of disease _____

Species affected Canada Geese (See Remarks)

Number Affected Species	Actual Count	Estimated
_____	_____	_____
_____	_____	_____
_____	_____	_____

Number Recovered 12

Number lost 750 (estimated)

Source of infection Blackflies

Water conditions Normal

Food conditions Normal

Remarks Examinations of other species revealed that the disease does affect other birds. Canada geese goslings apparently very susceptible. Major die-offs appear to happen on a 4-5 year cycle -- well documented die-offs occurred in 1960; 1964; and again this year. Research continued for the fifth consecutive year. (See disease section of narrative).

-1757
 Form NR-7
 Rev. June 1960)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

(1)

Refuge Sacey

Year 1968

Species	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
Red Pine	3,000	R		1	36.00		Conlon Field	600 trees per acre	5	Seedlings		90%	Improper Planting and Natural
Red Pine	1,000	R		1	12.00		Sub-Edge.	500 trees per acre	2	Seedlings		90%	
White Spruce	1,000	R		1	24.00		Conlon Field	200 trees per acre	5	Transplants		90%	
White Spruce	600	R		1	12.00		Sub-Edge.	300 trees per acre	2	Transplants		90%	
Red Pine	12	C	9/18	2									
Jackpine	12 Seed.	C	9/18	2									
White Pine	12 Seed.	C	9/18	2									
Sugar Maple	12 Seed.	C	9/18	2									
Am. Beech	12 Seed.	C	9/18	2									
Balsam Fir	12 Seed.	C	9/18	2									
B. Hemlock	12 Seed.	C	9/18	2									
Red Maple	12 Seed.	C	9/18	2									
Y. Birch	6 Seed.	C	9/18	2									

- (1) Report agronomic farm crops on Form NR-8
 (2) C = Collections and R = Receipts
 (3) Use "S" to denote surplus

Total acreage planted:

Marsh and aquatic _____
 Hedgerows, cover patches 7
 Food strips, food patches _____
 Forest plantings _____

Remarks: (1) Purchased from Wynn Nursery of the Michigan Dept. of Natural Resources. A donation of \$25.00 to Boy Scout Troop 124, Newberry and \$25.00 to 4-H Club, Conlon, was given by the refuge for planting the trees.

(2) Seedlings were taken from the three Natural Areas on the refuge and sent to the Cooper Arboretum in Grand Haven, Mich. for provenance testing.

-1757
Form NR-7
Rev. June 1960)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

(1)

Refuge Savoy

Year 1968

Species	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
Wild Rice	800 lb.	R	9/11	(1)	(2)	0	(3)	(Estimated)					
							A-1	50 lb./Ac.	1.0 Ac.	50 lb.	9/14	Unknown	--
							A-1 Pool	50 lb./Ac.	2.0 Ac.	100 lb.	9/14	Unknown	--
							B-1 Pool	50 lb./Ac.	3.0 Ac.	200 lb.	9/14	Unknown	--
							F-1 Pool	50 lb./Ac.	2.5 Ac.	150 lb.	9/14	Unknown	--
							J-1 Pool	50 lb./Ac.	4.5 Ac.	200 lb.	9/14	Unknown	--
							N. Show Pool	50 lb./Ac.	1.0 Ac.	50 lb.	9/14	Unknown	--
							S. Show Pool	50 lb./Ac.	1.0 Ac.	50 lb.	9/14	Unknown	--
							Total	15.0 Ac.	800 lbs.				
Tarp Millet (4)	200 lb.	R	6/20	Bromaha Seed. Co.	\$26	0	A-2	Various	5.0 Ac.	140 lb.	7/5	Fair	Frost
							UGP, B-1, F-1	Various	2.0 Ac.	60 lb.	7/9	Poor	Frost

- (1) Report agronomic farm crops on Form NR-8
- (2) C = Collections and R = Receipts
- (3) Use "S" to denote surplus

- Remarks: (1) Picked up at Tannock Refuge 9/9-11/68
 (2) Wild Rice share of trip -- about \$40. No cost for seed.
 (3) See maps in Wild Rice file.
 (4) Experimental -- See Field Investigation Section of NR.

Total acreage planted:

Marsh and aquatic 15.0 Ac.
 Hedgerows, cover patches _____
 Food strips, food patches _____
 Forest plantings _____

3-1758
Form NR-8
(Rev. Jan 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Geney County Schoolcraft State Michigan

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./ Tons	Acres	Bu. /Tons			
Buckwheat	9.0	90 bu.			29.0	445 bu.	38.0	New hay seedings Rye (fall '68) Wheat (fall '68) Hay stubble	43.6
Oats w/seedings	37.0	1,420 bu.			6.6	262 bu.	43.6		39.0
Rye (ripe)					32.7	335 bu.	32.7 ('67)		8.0
Rye (green)					39.0	8.7 T.	39.0		265.0
Winter Wheat (green)					8.0	1.3 T.	8.0		
								Fallow Ag. Land. Chicago Farm Diversions Farm	13.0 Ac. 13.9 Ac.

No. of Permittees: 2 Agricultural Operations 1 Haying Operations 1 Grazing Operations 0

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	Grazing	Number Animals	AUM'S	Cash Revenue	ACREAGE
Alfalfa, Red Clover, Bromo	322	153		1. Cattle				None
Alsike, Ladino, Bromo	108	112		2. Other				None
Refuge share of above = 21.5 ton baled hay off 50 Ac.				1. Total Refuge Acreage Under Cultivation				232 Ac.
Hay - Wild				2. Acreage Cultivated as Service Operation				204 Ac.

REFUGE GRAIN REPORT

Refuge Sandy

Months of January 1 through December 31, 1968

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Corn, shelled	425 bu.	(1) 491 bu	916 bu			216 bu	216 bu	700 bu		700 bu	
Corn, cored	144 bu		144 bu			75 bu	75 bu	69 bu		69 bu	
Buckwheat	50 bu		50 bu		20 bu		20 bu	30 bu	30 bu		
Garry Oats	18 bu	(2) 60 bu	78 bu		55 bu		55 bu	23 bu	23 bu		
Balboa Winter Rye	8 bu	(2) 90 bu	98 bu		18 bu		18 bu	80 bu	80 bu		
White Proso Millet	300 lbs		300 lbs					300 lbs	300 lbs		
Winter Wheat		(2) 25 bu	25 bu		15 bu		15 bu	10 bu	10 bu		
Smooth Brome		(2) 150 lbs	150 lbs		85 lbs		85 lbs	65 lbs	65 lbs		
Alsike Clover		(2) 200 lbs	200 lbs		115 lbs		115 lbs	85 lbs	85 lbs		
Ladino Clover		(2) 50 lbs	50 lbs		40 lbs		40 lbs	10 lbs	10 lbs		

(8) Indicate shipping or collection points (1) Shimasssee Refuge (2) Purchase Escanaba Feed and Seed Company

(9) Grain is stored at Refuge headquarters granary and steel storage bins.

(10) Remarks Large quantities of wheat, oats, legume and brome seed due to "wash out" at planting time.
Rye seed was to be furnished Cooperator but due to misunderstanding, he purchased his own without first checking with us.

*See instructions on back.

TIMBER REMOVAL

Refuge Sesay Year 1968

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
Robert Fox	68 - 1	NE 1/4 Sec. 36 T16N R19W	40	400 cords	6.25/cd.	\$2,500	All merchantable Jackpine	Jack Pine
<p>Contract for timber awarded in October, 1968 but cutting will not commence until January, 1969.</p>								

Not to be reported for '68

Total acreage cut over None Total income \$2,500

No. of units removed B. F. _____ Method of slash disposal _____
 Cords _____
 Ties _____

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

Refuge

Soney

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

Reporting Year

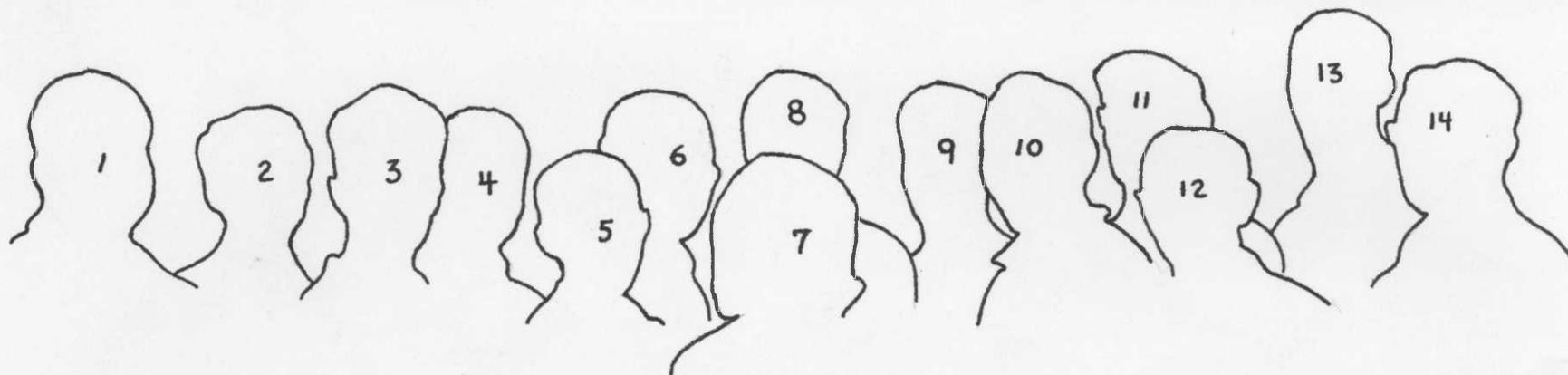
68 - 1

1968

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<u>None Applied during the year.</u>								

10. Summary of results (continue on reverse side, if necessary)



1968 TEMPORARY PERSONNEL

1.	Conrad A. Fjetland	Biological Technician	Michigan State University, Graduate Student
2.	Lawrence Vanatta	Neighborhood Youth Corps	
3.	Louis Berry	President's Youth Opportunity Campaign	
4.	Gerald L. Latsch	President's Youth Opportunity Campaign	
5.	Kenneth Ketola	Neighborhood Youth Corps	
6.	Louis Verner	Laborer	Michigan State University, Wildlife Undergraduate
7.	Susan L. Jack	Laborer (Visitor Center Receptionist)	University of Michigan, Conservation Undergraduate
8.	Robert Jack	Neighborhood Youth Corps	
9.	Ronald J. Field	Biological Technician	Michigan State University, Graduate Student
10.	Leo D. Lawrence	Laborer	
11.	John E. Sarvis	Biological Technician	University of Michigan, Wildlife Undergraduate
12.	William H. Ketola	Laborer	
13.	Lawrence Zellar	Laborer	
14.	Larry S. Strecker	Biological Technician	Michigan Technological University, Graduated June, 1968

June 19, 1968

R 168-10

Updike



Photo #2. Assistant Refuge Manager Donald J. Elias entered on duty March 14, 1968.

March, 1968

R 162-6

Updike

Photo #3. Manager Wilbrecht (left) presents Special Act Awards to Clerk Doran (center) and Assistant Updike for extra accomplishments occasioned by the extended vacancy of an assistant manager and the one-month vacancy of the refuge manager positions.

May, 1968

R 163-5

Elias



Photo #4. A major project early this spring was the renovation of the main entrance to the refuge. The old sign (note standards against trees to left) was removed the previous fall and refinished during the winter. The back side was routed so it could be set up perpendicular to the road rather than parallel to it. This is the site as it appeared just prior to the start of work.

May, 1968

R 165-6

Elias

Photo #5. A turn-off road at the entrance was eliminated and the gravel removed for use elsewhere. This turn-out received little use and in most cases merely confused those visitors who did use it, besides being somewhat of a traffic hazard. Top soil was hauled in, grass and a few small trees were planted to eliminate the eyesore.

May, 1968

R 165-7

10



11



Photo #6. The TD-14 levels off the rough spots and spreads top soil on the site. The old sign standard remains (right center) as the new standard begins to take shape.

May, 1968

R 164-3

Elias

Photo #7. Finally the newly refinished refuge entrance sign is moved into place, while seasonal laborer Bill Ketola uses the Case farm tractor to spread fertilizer and grass seed.

May 24, 1968

R 170-1

Elias

12



13



Photo #8. The finished product. After the grass grew in, the appearance of the refuge entrance was much improved. The sign at left was a convenience to visitors. The small signs hang on hooks and can easily be removed and replaced as refuge activities vary.

June 19, 1968

R168-12

Elias

Photo #9. Several other signs on the refuge will be replaced next spring with signs recently constructed at the regional sign shop. Marv Duncan and Chuck Johnston from the R.O. and Manager Wilbrecht inspect one of those scheduled for replacement. This old one at the Driggs River entrance may have some historical value. Faintly visible on the back side are the words "Bureau of Biological Survey".

July, 1968

R 169-8

Elias



Photo #10. Using waste oil obtained for the cost of hauling from Air Force Bases, we use about 10,000 gallons annually to treat several entrance roads and the Guided Tour route. Here the John Deere fertilizer spreader is used to spread about 3,500 gallons on one mile of main entrance road. This oil eventually soaks in and provides an asphalt-like surface. Its main drawback is it becomes extremely slippery when wet.

June, 1968

R 170-11

Elias

Photo #11. Refuge staff members set the pole for a security night light at refuge headquarters. This light turns on and off automatically and is a big asset for early morning banding operations in the summer and during late afternoons in winter when it gets dark early.

February, 1968

R 162-1

Updike

16



17



Photo # 12. Sub-headquarters north farm field prior to stripping top-soil and shelter-belt planting. We believe a tree strip here will shield geese from disturbance along the road, reduce deer shining activity and serve as a shelter-belt.

April, 1968

R 163-3

Elias

Photo #13. Refuge equipment salvaging top-soil from a strip one chain wide (66feet) by a quarter-mile long.

April, 1968

R 163-4

Elias



Photo #14. Here Student Verner surveys about 2,450 cu. yds. of top-soil which were hauled across the road to form this huge pile. Normally the refuge has paid \$10.00/load for soil to rebuild lawns and grazing sites.

July 17, 1968

R 172-12

Wilbrecht

Photo #15. After the strip was prepared, 15 members of Troop 124, Boy Scouts from Newberry, and six members of the Germfask 4-H Club planted approximately 5,600 pine and spruce seedlings here and at the refuge Conlon Farm field. Refuge Forester Hubbard instructs one of the youngsters in the proper technique of tree planting.

May 4, 1968

R 165-9

Elias

20



21



Photo #16. This bridge at the Upper Goose Pen was in a sad state of repair and a real SAFETY hazard, especially since it is on the guided auto tour route which is used daily in the summer and the major access route for deer hunters in the fall.

September 4, 1968

R 179-1

Elias

Photo #17. Manager Wilbrecht admires the improvement. The bridge was widened; new stringers, decking and running plank were put in and railings added.

September 19, 1968

R 180-8

Elias

22



23



Photo #18. Numerous sand-blows on dikes and roads are a problem. We are gradually getting to them and perhaps in a few years will be pretty well caught up for awhile. This is the west end of A-2 dike and is nearly inaccessible by vehicle. We may try American Beach Grass on these hard to get at "blows".

June 21, 1968

R 169-4

Updike

Photo #19. Hay produced on refuge fields provide a good mulch. Summer employees spread hay on A-2 dike, thus preventing further wind erosion damage. Seed from the hay will germinate and eventually provide a stabilizing vegetative cover and graze for the geese.

July 17, 1968

R 172-11
Wilbrecht

24



25



Photo #20. Students are a big help in the summer when there is so much work to be done. However, they sometimes create even more work. This damage to one of the shop buildings occurred when a student attempted to drive a 1½ ton stake truck into the stone building and missed. The truck was undamaged except for a broken rear-view mirror.

August 6, 1968

R 176-2

Elias

Photo #21. New roofing was placed on the barracks storage building at Sub-headquarters. In addition the Quarters #7, garage and the barracks were painted and repaired as necessary.

August 7, 1968

R 176-5

Elias



Photo #22.

The water control structure at B-1 Pool required extensive repairs. The pier which Maintenceman Losey is working on was completely undercut and worn away. Only the reinforcing rod held it upright. Cracks and erosion damage were present elsewhere on the structure. Speedcrete Blue-line was the material used in making these repairs. In addition the railings on the bridge above the structure were replaced.

September 19, 1968

R 180-1

Elias

Photo #23.

The picnic areas also required some maintenance and improvement. The toilets at the Driggs Picnic Area were improved through the installation of concrete vaults. The bottom halves of standard septic tanks were used. Previously these toilets were merely sitting over a pit in the ground and thus did not meet minimum health standards.

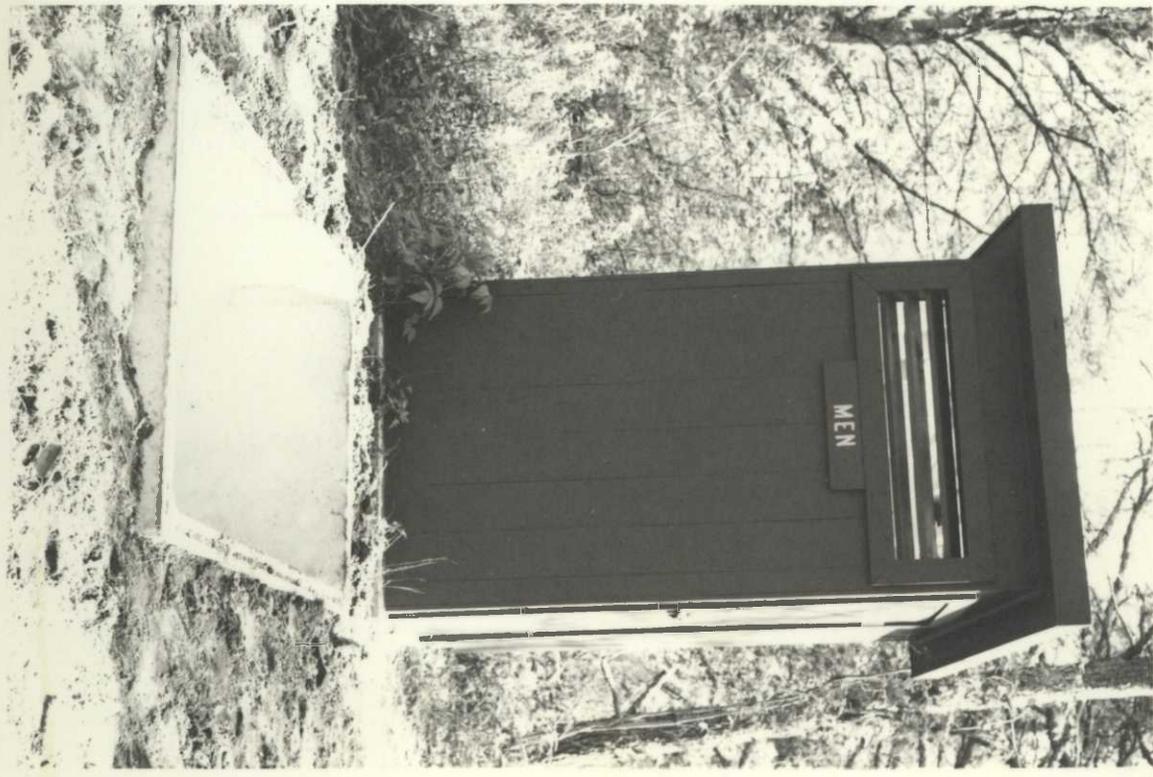
July 11, 1968

R 171

Elias



28



28

Photo #24.

Apparently, moisture seeping through the masonry caused plaster to crack and fall off inside the Visitor Center. To counteract this, we sealed the exterior of the building with Hydrocide S-X Hycon, a clear masonry and concrete sealant. It was applied with a spray gun and touching up done with a brush as Y.O.C. Gerald Latsch is doing here.

August 27, 1968

R 175-5

Wilbrecht

Photo #25.

Several of the Thermo-Pane windows in the Visitor Center failed and became clouded by condensed moisture between the panes. These windows are backed by a three-year warranty and were replaced by the company without charge.

July 29, 1968

R 175-8

Elias

(31)



(30)



Photo #26. Many man-hours of lawn watering labor will be saved as a result of this lawn sprinkling system which was installed on the visitor center lawn. Mechanic Orlich (left) "points out" to Mr. Vecellio of the Northern Irrigation Service, Norway the intricate art of pipe laying.

July 12, 1968

R 171-11

Wilbrecht

Photo #27. The heart of the Visitor Center lawn sprinkling system is this pump which will take water from the Upper F-1 Pool behind the center.

July 29, 1968

R 175-9

Elias



Photo #28. We unlimbered the Rome disc behind the TD-14 to knock down several acres of cattails on the west end of the Lower Goose Pen-lower Sub-headquarters field. Nine acres was then fine disced and seeded to winter rye for goose browse.

August 15, 1968

R 177-5

Wilbrecht

Photo #29. Rotary mowing the six acre seeding on the extreme west end of the Lower Goose Pen Pool and below Smith Field made an attractive grazing area. All of this standing vegetation was clipped.

August 15, 1968

R 177-7

Wilbrecht



Photo # 30. The nine acres previously cleared of tag alder in 1966 was reworked in late summer. Cattail was disced on the west end and several clay piles were removed and added to the gravel stockpile.

August 6, 1968

R 173-2

Wilbrecht

Photo #31. The field was disced, fertilized and seeded to winter rye for goose browse. About 2/3rds of this is actually pool bottom which will flood out with summer nesting water levels. Plans are to annually drop the pool level and plant rye or wheat for browse and to eliminate tag alder regrowth.

August 11, 1968

R 176-11

Wilbrecht



Photo #32. Manager Wilbrecht surveys the results of hail damage to a rye field at Walsh Farm, hit on June 1. The crop looked good prior to this.

June, 1968

R 170-12

Elias

Photo #33. The same field six weeks later after abundant summer moisture assisted the rye to recovery. Yield was estimated at 25 bu./ac. which we disced in lightly in September to reseed.

July 23, 1968

R 174-8

Elias

45



46



Photo #34. Cooperative hay ground at Sub-headquarters. Hay yields this year averaged 2.1 ton/acre compared to 1.6 ton/acre last year on these hardwood soils. This is a mixture of alfalfa, red clover and brome.

August 3, 1968

R 173-9

Wilbrecht

Photo #35. Abundant summer precipitation kept water in the small run-off pond at Chicago Farm. Some erosion control work needs to be done on the slopes.

July 11, 1968

R 171-4

Updike

34



35



Photo #36. Clair Rollings, R.O. and Manager Wilbrecht discuss crops on the Walsh Farm. This is peat soil and generally difficult to crop. Abundant moisture made it bloom this summer, but a frost in August got the buckwheat just as seed was developing.

August 1, 1968

R 173-7

Elias

Photo #37. Abundant moisture made the peat farms look good. Here on the Diversion a field of alsike (with some ladino and brome) produced excellent hay and fall goose browse. Hay yields on the peat was lower on the average than last year, but quality was better and browse for geese considerably improved.

July 11, 1968

R 171-6

Updike

36



37



Photo #38. Temporary Duane Lawrence upon our new 4020. Note the high flotation tires front and rear. A 10' disc was traded to obtain this 17'10" model. We plan to build our farming program around this new tractor.

July 12, 1968

R 172-10

Wilbrecht

Photo #39. Clair Rollings (right) explains the proper adjustments on a spring-tooth harrow to Assistant Updike, Temporary Lawrence and Manager Wilbrecht. This harrow was picked up, as excess, in nearly new condition from Kincheloe Air Force Base by Mechanic Orlich.

August 1, 1968

R 173-5

Elias

35



39



Photo #40. We borrowed the State's lowboy to haul the B-E Crane to Diversion Farm. Mechanic Orlich fitted the crane for work after it had stood for several years at headquarters. It was acquired on excess.

October 1, 1968

R 180-10

Wilbrecht

Photo #41. Mechanic George Orlich "in the saddle". After over 30 years on the Seney Refuge, George had dug many a ditch and built much of the dike system with older, but bigger draglines. After watching him swing this rig it was obvious he hadn't lost his touch.

October 30, 1968

R 183-5

Wilbrecht



Photo #42. This photo and the one below illustrates the problem. The shallow, plugged ditch bordering the south field boundary at Diversion emptys into a similar ditch running south toward A-2 Pool. Neither does the job. Manager Wilbrecht stands at the southeast corner where new ditch will come from the east to hit the bottom of the field.

October 14, 1968

R 181-3

Elias

Photo #43. The south strips of Diversion Farm, looking south, shows the abundant summer and fall moisture. This is desirable in fall, but makes farming a little damp during planting time. Many of these strips will be combined to make larger fields for easier farming.

October 21, 1968

R 182-9

Wilbrecht



Photo #44. Diversion Drain Project. Six mats were constructed from Red Pine cut near the Diversion Farm. Here Orlich swings one into position. Surprisingly the mats were used only along several portions of the line.

October 30, 1968

R 183-2

Wilbrecht

Photo #45. Part of the Diversion Drain. Completed ditch connected southeast corner of the Diversion Farm to Unit II Diversion Ditch, a distance of 2,630'. Here there is about one foot of peat overlaying sand.

October 25, 1968

R 182-10

Elias



Photo #46. A series of experimental plantings of Japanese Millet were made to determine whether or not it would (1) provide needed gosling browse once dike vegetation got tough and (2) if it would grow on certain pool bottoms and (3) if it would provide seed in fall. The major planting was made in A-2 Pool (5 acres) following draw-down. This photo was taken looking down the length of plots 2, 3 and 4.

August 3, 1968

R 173-11

Elias

Photo #47. Biological Technician (Summer Student) Conrad Fjetland, inspects the progress of the millet planted in A-2. This was one of Fjetland's summer projects. Results of the experiment indicated that it provided some goose browse, but failed to set seed due to late planting dates.

July 18, 1968

R 174-4

Wilbrecht



Photo #48. Student Fjetland works on an aquatic plant transect in the south Show Pool. He ran all the established transects on the refuge and will utilize the data gathered plus past data in analyzing the affects of the water management program. The results will be published as a master's thesis at Michigan State University.

August 27, 1968

R 178-3

Wilbrecht

Photo #49. Maintenceman Losey heaves on a beaver dam on the Diversion Ditch. After last spring's removal program, the three dams on the ditch weren't active. A trip from the Driggs to Holland Ditch indicated no new activity. Dams here block water diverted from the Driggs River to our pool system.

September 3, 1968

R 178-11

Wilbrecht



Photo #50. Maintenceman Glen Losey checks on one of the three holding cages he built for use in the Leucocytozoon research project being carried on by Patuxent Research Center. A cage was placed at each of three sites on the refuge and a Canada goose family held in each from mid-May to the first part of September. The family remains in the cage during the day and is allowed (and held in by a sliding door) into the house at night. The purpose of this experiment was to expose the birds to blackflies as they would be naturally and collect blood samples daily to follow the development of the infection in the individual birds.

May, 1968

R 164-5

Wilbrecht

Photo #51. John Stuht, assistant to Dr. Tarshis on the study, conducts an experimental feeding of laboratory-reared blackflies on an infected gosling. The flies are then macerated and inoculated into clean birds to determine if they are, in fact, vectors of the disease. Dr. Tarshis has identified 50 species of blackflies in the area, but it appears that very few of them are capable of transmitting the disease.

June, 1968

R 169-6

Wilbrecht



Photo #52. NYC's Bob Jack, Larry Vanatta and Kenny Ketola give Student Sarvis a hand in searching for Ring-necked Duck nests. In an attempt to learn more about the Ring-necked Duck, one of the major nesting species at Seney, Sarvis was assigned to do a preliminary survey of the status of this species. Although investigations were made throughout the refuge the intensive studies were made in the Study Area (F-1, E-1 and G-1 Pools).

June 19, 1968

R 167-3

Updike

Photo #53. Fifteen ringneck nests were found. Data recorded included: date found, clutch size, egg measurements, amount of down, vegetative type, nest materials, distance to nearest open water, distance to nearest dike, height above water, depth of water under nest, nest dimensions, nest fate and other pertinent observations. In most cases it appears the ducks associated with a pool (such as E-1 to right) would fly over the dike and nest in the cattail and sedge marshes below the dike such as that to the left in this photo.

June 19, 1968

R 167-8

Updike



Photo # 54. Student Sarvis points to nest #9, found in a sedge marsh with some cattail. Thirteen percent of the nests found were in this vegetative type. Open potholes of water near the nests were common. Many nests were typical of divers -- construction and location.

June 19, 1968

R 168-10

Updike

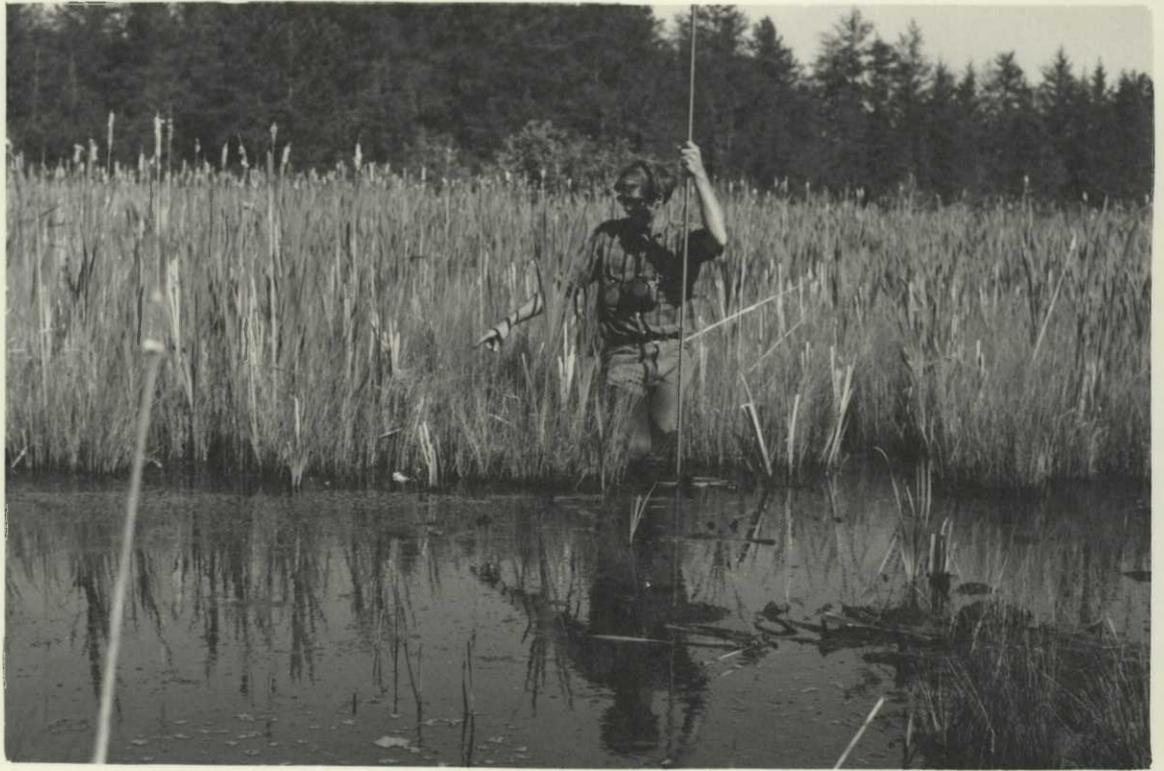
Photo #55. A closeup of nest #9 reveals the primarily sedge vegetative cover. This nest contained eight eggs and all eight hatched successfully. Average clutch for 14 nests was 7.2 with a range from five to ten eggs.

June 19, 1968

R 168-11

Updike

54



55



Photo #56. Student Sarvis and Manager Wilbrecht measure eggs at nest #4 located below E-1 dike. Sixty percent of the nests were found in a primarily cattail vegetative type. Note the open water seep area in foreground.

June 19, 1968

R 168-1

Updike

Photo #57. Nest #4 (in cattail) contained five eggs, four of which hatched and one of which was apparently infertile.

June 19, 1968

R 167-12

Updike



Photo #58 NYC Jack stands near nest #5 on the left and NYC Ketola stands near nest #6 on the right. These nests were only 15 feet apart. Nest #5 contained nine eggs, all of which hatched successfully. Nest #6 was apparently abandoned following the first visit and none of the five eggs contained in it hatched.

June 19, 1968

R 168-5

Updike

Photo #59. One of the nests found (7% of total) was located at the base of a tag alder bush in a fairly even mixture of cattail, sedge and tag alder. This nest (#3) contained eight eggs when originally found, and five eggs on the second visit. These five hatched successfully.

June 19, 1968

R 168-9

Updike

58



59



Photo #60. Michigan Department of Natural Resources Biologist Ray Salo, Manistique, inspects a dead Old Squaw. Salo and Manager Wilbrecht investigated a water bird die-off and concurrent oil spill in October along the north shore of Lake Michigan south of Gulliver. Botulism appeared responsible for most bird mortality.

October 18, 1968

R 182-2

Wilbrecht

Photo # 61. A live but sick loon. Note oil on breast feathers. This bird died several days later of botulism. Search of 6.8 miles of beach turned up about 300 loons, 20 gulls, a Red-necked Grebe and one Old Squaw. The die-off along Lake Mich., first documented in 1963 when a extensive mortality occurred along the east and north shores, takes an estimated 3,000 loons annually.



Photo #62.

A proud grandfather-grandson and a string
of bullheads -- a pretty complete picture.

July, 1968

R 169-10

Elias

Photo #63.

The 1968 fishing season did not set any records,
either in numbers or size of fish caught or in
numbers of fishermen trying their luck. But it
is doubtful that anyone would convince this
angler that the fishing at C-3 Pool isn't pretty
great.

July, 1968

R 169-9

Elias

63



62



Photo #64. Our public use program at Seney is designed to provide nearly something for everyone. Nature study and hunting with a camera are becoming ever more popular.

July 8, 1968

R 171-2

Elias

Photo #65. Possibly the very young appreciate nature even more than some of us. It's unfortunate that this appreciation all too often disappears as they grow older and wiser?

July, 1968

R 169-12

Elias

69



45



Photo #66. During the duck banding season we add a special attraction to our evening guided tours. Here tour leader Fjetland explains the purpose of banding operations and demonstrates how it is done. The youngsters especially enjoy this segment of the tour (with the possible exception of the little fellow at the lower right).

August 8, 1968

R 176-9

Elias

Photo #67. Organized groups such as school groups and bird-watching groups made good use of refuge facilities this year. Manager Wilbrecht conducts a tour for the Marquette chapter of the Michigan Audubon Society.

May, 1968

R 163-7

Elias



Photo #68. Refuge staff members were active in a number of community and other off-refuge activities such as Lions Club, Toastmasters International, Boy Scouts and 4-H Club projects, community recreation programs for youngsters, cooperative radio programs and newspaper feature columns to name a few. This float took part in a local Catholic Church parade that we were asked to participate in.

July 22, 1968

R 174-6

Elias

Photo #69. A number of high school and college biology and science classes find an ideal outdoor laboratory at Seney. The University of Michigan wildlife students make an annual visit to Seney as part of their summer camp activities. This year an ecology class and a class of vertebrate natural history from Northern Michigan University joined the U. of Mich. group for the day at Seney.

July 24, 1968

R 174-12

Wilbrecht



Photo #70. Assistant Elias (in parka) discusses the progress of the 1968 deer hunting season at Seney. Not everyone was as fortunate as the family in this car. The woman got a nice buck opening day near Chicago Farm (only to have it stolen from the meat pole right in the town of Curtis). Two days later the father and son nailed these fine specimens along Pine Creek Road. A check station was run at Sub-headquarters for the first 3 days. A total of 180 hunters with 41 deer and 1 bear were checked giving an approximate 22.7% success ratio. In addition 16 deer were checked in the field and the kill on the refuge was estimated at 140 deer.

November 17, 1968

R 183-6

Wilbrecht

Photo#71. We're happy we don't have to title this "Opening day at C-3 Pool". The "coho craze" overshadowed most everything in the Upper Peninsula this year. It was shoulder-to-shoulder at Thompson Creek just west of Manistique. The art of angling as described by Walton -- "honest, ingenuous, quiet and harmless" -- will never be the same again.

September 6, 1968

R 179-6

Wilbrecht



Photo #72. As this report was being prepared, scenes such as this were common. During the last two months of 1968 we received a total of 89 inches of snow, nearly 64% of the total for all of 1967. It promises to be quite a winter in the Upper Peninsula of Michigan.

January, 1968

R 162-6

Updike

72



HURON ISLANDS NATIONAL WILDLIFE REFUGE

No visits were made to the islands by Refuge Personnel during 1968. Status of the Wilderness proposal is the same as that reported for the Seney area (page 71).